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admission scholarships bursaries loan funds

1970
1971

Published by the
OFFICE OF STUDENT AWARDS
UNIVERSITY OF TORONTO
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INTRODUCTION

This booklet describes types of student financial aid offered by the University of Toronto and its federated universities (Victoria, Trinity, and St. Michael's) to students entering undergraduate courses. It also lists certain awards made by the Government of Ontario and other agencies.

A SCHOLARSHIP OR PRIZE is normally awarded only for academic excellence.

A BURSARY is awarded to students who require financial aid in order to obtain a university education; a good academic standing is required and must be maintained.

LOAN FUNDS assist students with emergency financing, or supplement scholarships or bursaries. Loans are repayable according to a definite loan agreement, and interest is not normally charged until after graduation or withdrawal.

COSTS OF UNIVERSITY EDUCATION

In the year 1969–70, total first year costs (i.e., for the 8-month academic session *only*) varied from $2,000 to $2,500 for students living in residence or away from home, and from $1,100 to $1,300 for students living at home in the Toronto area. The total amount depends in part upon the fees for the chosen course; these are described in the calendars of the faculties and are printed in the Undergraduate Admission Circular. The total figures also include an allowance of approximately $500 for miscellaneous expenses such as books, supplies, laundry, cleaning, clothing, and transportation. Board and lodging in a university residence costs from $850–$1,000 but can sometimes be obtained at a lower cost in a boarding house or co-operative residence. Some costs increase after the first year.

Qualifications

A candidate must

(*a*) have spent one year only in Grade 13. (This rule may be waived at the discretion of the Senate Committee on Scholarships where there are extenuating circumstances. Petitions to the Committee for permission to apply in a second year of Grade 13 must be submitted to the Director of Student Awards, University of Toronto, accompanied by a Principal's report before April 1 of the year of entrance to the University);

(*b*) offer in 1970 those Grade 13 subjects (at least four Grade 13 subjects comprising at least seven credits) which meet the general requirements for admission to a degree course;

i) if high standing in one or more Grade 13 subjects was attained before 1969–70, these results may be taken into consideration, provided that the current Grade 13 programme still includes a minimum of four subjects and seven credits;

ii) in exceptional cases, R.C.M.T. Music may be accepted as one of the required Grade 13 credits; further information can be obtained from the Office of Student Awards;

(*c*) register at the University, fulfilling the conditions specified for any particular award.

Applications

1. For awards in heavy type (Sections I and II, Pp. 6–31)

(*a*) Applicants for admission to the University of Toronto WHO MEET THE CONDITIONS LISTED ABOVE and who wish to compete for the awards listed in Sections I and II of this booklet must obtain an admission scholarship application from the High School Principal or Guidance Officer.

(*b*) Completion of Section I of the admission scholarship application ensures that applicants will be considered for the awards listed in Section I of this booklet.

(*c*) Students who are also interested in the awards (including bursaries) described in Section II of this booklet—in general any awards where special conditions pertain, or where the value is partially or wholly determined by financial need—should also complete Sections II and/or III of the admission scholarship application as directed.

(*d*) The admission scholarship application should be returned to the High School Principal or Guidance Officer for submission by him to the University before April 25. The majority of scholarship offers will be made in June.

2. For awards in light type (Section III (A) and (B), Pp. 32–46)
Details of the method of application are contained under the award name and any application forms required should be obtained from the address provided. It should be particularly noted that the University's Office of Student Awards *cannot* supply application forms for any awards listed in Section III, except where specifically stated.

Certain admission scholarships are tenable for more than one year. In order to ensure that the scholarship may be retained for the second and subsequent years, the holder must obtain Grade A or First Class Honours standing at the annual examinations (or such other standing as may be specified) and must register for full-time attendance in the next higher year of the course.

BURSARIES

If a student wishes to be considered for university bursaries, he must complete the statement of financial need on the University scholarship application. Other bursaries require special applications as described. Bursaries are awarded for one year only; new application must be made in any subsequent session, and further awards will be determined on the basis of the applicant's academic performance and need of assistance, and the funds available.

LOANS

Conditions of loans vary with each loan fund. Special applications should be made where indicated. The procedure for application is given in the descriptive sections.

PAYMENT OF AWARDS

1. Awards will be paid as follows:
   (*a*) Where the value does not exceed $100, in one instalment on November 20.
   (*b*) Where the value exceeds $100, in two equal instalments, the first on November 20 and the second on January 20.
   Full instructions regarding payment are contained in the letter of award.
2. Deferred payment:
   In certain special circumstances a successful candidate may apply to have the payment of an award deferred. Any such requests from students in the Faculty of Arts and Science should be made to the College Registrar; all other students should apply to the Office of Student Awards, Simcoe Hall.

TUITION ALLOWANCE

The tuition allowance specified in some awards does not necessarily cover the entire tuition fee. The amount of the allowance is determined from year to year and the value for any year may be obtained by inquiry at the Office of the Chief Accountant, 215 Huron Street, or the College Bursar.

A candidate holding such an award is entitled to his allowance for the first year and for subsequent years provided that he maintains the academic standing specified in the terms of each award.

A student winning more than one scholarship carrying tuition allowance may claim such allowance on only one of such awards. In no case may the tuition allowance be claimed in cash.

SECTION I

Applicants for admission to the University of Toronto who meet the qualifications listed on page 4, will be considered for any of the awards in this section for which they are eligible.

Section I(a) UNIVERSITY ADMINISTERED AWARDS TENABLE IN ANY FIRST DEGREE COURSE

Mary H. Beatty Admission Scholarships

Gift of the late Mary H. Beatty, a large number of scholarships open to candidates who obtain First Class standing in their final secondary school year. The awards are renewable in each year of the scholar's course and into such continuation courses as Dentistry and Law provided satisfactory standing is maintained.

Minimum value: $600 annually. (If the statement of financial need on the scholarship application is completed, an award of from $600 to $1,000 may be made.)

J. W. Billes Admission Scholarships

Gift of the late John William Billes, these scholarships vary in number and are open to candidates who obtain an average of 75% in those Ontario Grade 13 subjects required for admission. The awards are renewable in each year of the scholar's undergraduate course provided Grade A, or First Class Honours standing is maintained.

Minimum value: $250 annually. (If the statement of financial need on the scholarship application is completed, an award of from $250 to $1,500 may be made.)

Douglas M. Burgess Memorial Scholarship

Gift of Mrs. Ella H. Burgess and members of her family, awarded to a student who has spent at least one session at Port Credit Secondary School and during that session has been enrolled in Grade 13. The award will be based chiefly upon the standing achieved in Grade 13, but consideration will also be given to general interest in athletics and evidence of good sportsmanship, and to interest in community affairs and a general sense of responsibility and leadership.

Value: $275.

Geoffrey P. E. Clarkson Scholarship

Gift of Geoffrey P. E. Clarkson, Esq., awarded for general proficiency, with preference to a student from St. Andrew's College, Aurora.

Value: $200.

Richard Craddock Admission Scholarship

The estate of the late Richard H. Craddock provides a scholarship to be awarded for high standing in Grade 13. The award is renewable in each year of the scholar's undergraduate course provided Grade A or First Class Honours standing is maintained.

Value: $700 annually.

General Motors Canadian University Scholarship

Gift of General Motors of Canada, Limited, awarded to a student who is a Canadian citizen, on the basis of outstanding performance in Grade 13. The award is tenable for four years in any course leading to a degree, provided satisfactory academic standing is maintained. On the scholarship application form state place of birth and, if outside of Canada, give date and number of naturalization papers.

Value: $1,000 annually.

The Helen E. Rogers Admission Awards

Established through a bequest from the estate of the late Helen E. Rogers. Preference is given to applicants from outside Ontario but failing such candidates awards may be made to qualified Ontario students. Recipients must have a standing satisfactory to the Committee of Award on first admission and may continue to enjoy the scholarship in each year of their course provided they maintain satisfactory standing. The number of awards to be made shall be determined in each year according to the annual income available.

Minimum value: $250 annually. (If the statement of financial need on the scholarship application is completed, an award of from $250 to $1,500 may be made.)

Applications: *Students resident in Ontario* apply on the admission scholarship application. *Students resident outside Ontario* may obtain application forms from the Office of Student Awards, University of Toronto, Toronto 5, Ontario, Canada.

Walter Sterling Admission Scholarships

Established as a memorial to her father, Walter Sterling, by a bequest from the estate of Muriel Edith Rush. Recipients must obtain First Class Honours standing in the Ontario Grade 13 subjects required for admission, and may continue to enjoy the scholarship in each year of their undergraduate course provided they maintain Grade A or First Class Honours standing. The number of awards to be made shall be determined in each year according to the annual income available.

Minimum value: $250 annually. (If the statement of financial need on the scholarship application is completed, an award of from $250 to $1,500 may be made.)

Varsity Fund National Admission Scholarships

Gift of Alumni through the Varsity Fund, these scholarships vary in number and are open to candidates who obtain First Class standing in the final secondary school examinations for their province, which are acceptable for admission to the University of Toronto. The awards are tenable for four years provided standing satisfactory to the Committee of Award is maintained. Complete the statement of financial need if an award greater than $250 is desired and supply details of either or both parents' attendance at the University of Toronto (if applicable). Preference shall be given to applicants from outside Ontario, and to the children of U. of T. alumni.

Minimum value: $250 annually. (If the statement of financial need on the scholarship application is completed, an award of from $250 to $1,500 may be made.)

Applications: *Ontario applicants* complete the admission scholarship application.

Applicants living outside the Province of Ontario should obtain the necessary forms from the Office of Student Awards, University of Toronto, Toronto 5, Ontario, Canada.

In addition to the above scholarships, the following awards are offered in individual Faculties, Schools, and Colleges as specified:

TENABLE ONLY IN THE FACULTY OF ARTS AND SCIENCE

Edward Blake Scholarships

Gift of the late Hon. Edward Blake, M.A., LL.D., formerly Chancellor of the University, three scholarships awarded for general proficiency to candidates entering the Faculty of Arts and Science. Insofar as is possible without involving inequity to any potential winner, these scholarships will be divided among students intending to specialize in the following fields of study: English and history; languages; mathematics and science.

Value: $400 cash, with a tuition allowance of the same amount for each of four years, provided Grade A standing is maintained.

Margaret Anna Brock Scholarship

Gift of the late Col. Henry Brock, D.C.L., and the Misses Brock, awarded for proficiency in English and History of Grade 13 to an applicant who enrols in the Faculty of Arts and Science.

Value: $200 approximately, with an allowance of the same amount on tuition for four years, provided Grade A standing is maintained.

Robert Bruce Admission Scholarship

Awarded for general proficiency in Grade 13 to a student entering a course in the Faculty of Arts and Science.

Value: $200.

George R. R. Cockburn Scholarship

Gift of the late Mary Cockburn, awarded to the applicant ranking highest in Greek of Grade 13 and entering the Faculty of Arts and Science. It is tenable with any other University scholarship.

Value: Approximately $50.

Gibson Scholarships

Gift of the late Hon. Sir John M. Gibson, M.A., LL.D., two scholarships, awarded to applicants who have been students of Hamilton Collegiate Institutes for at least the two years immediately preceding the award, who rank first and second in First Class Honours in Grade 13, and who enter the Faculty of Arts and Science. Tenable with any other University scholarships.

Value: 6/11ths and 5/11ths of the income (approximately $180 and $150), with an allowance of the same amount on tuition for one year.

William Hardie Scholarship

In memory of William Hardie, B.A., of Ottawa Collegiate Institute, awarded on the basis of Grade 13 standing to the candidate of any one of the Ottawa Collegiate Institutes and High Schools who, having fulfilled all other conditions, ranks highest in First or Second Class Honours in any two of the following subjects—English, Greek, Latin, and enrols in the Faculty of Arts and Science. This scholarship is not tenable with any other admission scholarship awarded by the University.

Value: $100, with an allowance of the same amount on tuition for three years, provided Grade A standing is maintained.

Joseph Henderson Memorial Scholarship

Gift of the late Mrs. Joseph Henderson, awarded for proficiency in English and History of Grade 13 to a candidate entering the Faculty of Arts and Science.

Value: The annual income from the Fund (but not less than $80), with an allowance of the same amount on tuition for four years, provided Grade A standing is maintained.

Herbert W. Irwin Memorial Prize

Gift of the Harbord Graduates' Association, awarded to a candidate entering the Faculty of Arts and Science from Harbord Collegiate Institute who, among the required subjects, has standing in English, French, and German of Grade 13, and obtains the highest standing in English and either French or German in the year immediately preceding University entrance.

Value: Approximately $60.

Mary Mulock Scholarships

Gift of the late Mrs. Mulock, two scholarships, awarded for proficiency in Greek and Latin of Grade 13 to applicants entering the Faculty of Arts and Science.

Value: $60, with an allowance of the same amount on tuition for four years, provided Grade A standing is maintained.

Prince of Wales Scholarship

Gift of King Edward VII, awarded to the candidate with the highest standing in Grade 13, who is also awarded one of the University admission scholarships in the Faculty of Arts and Science.

Value: $50.

TENABLE ONLY IN THE FACULTY OF APPLIED SCIENCE AND ENGINEERING

Association of Professional Engineers of the Province of Ontario Admission Scholarship

Gift of the above Association, awarded to the student who ranks highest in the Ontario Grade 13 subjects prescribed for admission to the Faculty of Applied Science and Engineering.

Value: $500.

J. P. Bickell Foundation Admission Scholarships

Gift of the above-named Foundation, these scholarships vary in number and are open to candidates who secure an average of at least 75% in the Grade 13 subjects required for admission to the course of their choice, and who register in the Faculty of Applied Science and Engineering in the Chemical Engineering, Geological Engineering or Metallurgy and Materials Science courses. An average of at least 75% in the annual examinations of the First and Second Year is required for continuation of the award.

Value: $1,500, paid in three instalments of $500 annually. Eight to be awarded in 1970.

Engineering Alumni Admission Scholarships

Gift of the Engineering Alumni Association, seven scholarships awarded to candidates for high standing in the subjects of Grade 13 prescribed for admission to the Faculty of Applied Science and Engineering.
Value: $1,000 each.

Grabill Admission Scholarship

Gift of the late Mr. Dayton L. Grabill, awarded to the candidate who, after one year's instruction in Grade 13, is among those with the highest average percentage in the subjects of Grade 13 required for admission to the Faculty. (Minimum average required is 75%.)
Value: Approximately $500.

Murray Calder Hendry Scholarship

The estate of the late Grace Appel Hendry provides a Scholarship to be awarded to the applicant attaining at least First Class standing in the prescribed Grade 13 subjects and the highest marks in mathematics, and registering in the First Year of any course in the Faculty.
Value: Annual income from the capital sum of $10,000 (approximately $500).

Roy Jarvis Henry Admission Scholarships

The estate of the late Roy Jarvis Henry provides three scholarships to be awarded to students who have achieved high standing on the Ontario Secondary School qualifications required for admission, two of which are open to students entering any course in the Faculty and one open to students entering Geological Engineering. In the lack of a suitable candidate in Geological Engineering, all three awards are tenable in any course in the Faculty.
Value: $500 each.

Lachlan Dales McKellar Admission Scholarships

Provided by a bequest of the late Leona D. McKellar, two scholarships are offered to students who have achieved high standing on the Ontario Secondary School qualifications required for admission to the Faculty.
Value: $500 each.

Wallberg Admission Scholarships

Provided by the Wallberg Bequest, two scholarships, awarded to the applicants who obtain the highest average percentage (at least 75%) in the subjects of Grade 13 prescribed for admission to the Faculty of Applied Science and Engineering, and register in the Faculty.
Value: $500.

TENABLE ONLY IN THE DIPLOMA COURSE IN DENTAL HYGIENE (FACULTY OF DENTISTRY)

Royal College of Dental Surgeons Centennial Admission Scholarship

Gift of the Royal College of Dental Surgeons of Ontario, awarded to a resident of Ontario on the basis of at least First Class standing in Grade 13.
Value: $200.

TENABLE ONLY IN THE FACULTY OF FOOD SCIENCES

Consumers' Gas Company Scholarship

The Consumers' Gas Company offers a scholarship to a woman student with high scholastic standing in Grade 13 entering the Faculty of Food Sciences.
Value: $200.

Toronto Home Economics Association Scholarship

Gift of the Toronto Home Economics Association, awarded for general proficiency in Grade 13 to a student resident in the Metropolitan Toronto area entering the Faculty of Food Sciences.
Value: $200.

TENABLE ONLY IN THE FACULTY OF FORESTRY

The Charles H. Pinhey Forestry Scholarship

The Charles H. Pinhey Forestry Scholarship donated by the Ottawa Board of Trade has a total possible value of $750 over four years. It is awarded to a student entering the First Year of the Faculty of Forestry who obtained a high scholastic standing in Grade 13, but who has not won another admission scholarship in the Faculty. Preference is given to a student from a secondary school in Ottawa. In order to retain the scholarship in higher years, satisfactory academic standing must be maintained and the student must remain enrolled in the Faculty of Forestry.
Value: $300 in first year, $150 in subsequent years.

TENABLE ONLY IN THE SCHOOL OF NURSING

Kathleen Russell Scholarship

Gift of the late Miss Elsie Watt, awarded to the student ranking highest with at least Second Class Honours in the Grade 13 subjects required for admission to the basic degree course in the School of Nursing.
Value: $300 annually for four years provided Second Class Honours standing is maintained.

TENABLE ONLY IN THE FACULTY OF PHARMACY

Lord's Pharmacy Scholarship

Gift of Lord's Supervalue Pharmacies Limited, Toronto; awarded to a student entering the Faculty of Pharmacy who has obtained First Class Honours in Grade 13 and has not won an award of equal or greater value. The scholarship may be renewed in the second year if First Class Honours is maintained.
Value: $500 annually for a possible two years.

Ontario College of Pharmacy War Memorial Matriculation Scholarship

Gift of the graduates of the Ontario College of Pharmacy, awarded to the applicant entering the Faculty of Pharmacy and ranking highest in First Class Honours in Grade 13.
Value: During each of the four undergraduate years: $50 cash, plus the total academic fee, provided First Class Honours is maintained.

Tamblyn Scholarship

Gift of G. Tamblyn, Limited, offered annually to the male student entering the Faculty of Pharmacy who obtains the highest average percentage in Grade 13, and who has not won an admission award of greater or potentially greater value.
Value: $500.

Section I(b) COLLEGE ADMINISTERED AWARDS TENABLE ONLY IN UNIVERSITY COLLEGE

University College offers up to seventy-five admission awards; thirty-four of these carry renewable free tuition and two others are major renewable awards.

Arthur Caplan Scholarship

Gift of Arthur Caplan, awarded for general proficiency in Grade 13.
Value: $350.

Florence Louisa Cody Memorial Scholarship

Bequest of the late Canon H. J. Cody, C.M.G., LL.D. and Florence Louisa Cody, awarded for general proficiency in Grade 13 to an applicant from a school outside Metropolitan Toronto.
Value: $290 approximately, with the tuition allowance for four years, provided Grade A standing is maintained.

Two Maurice Cody Memorial Scholarships

Bequest of the late Florence Louisa Cody, awarded for general proficiency in Grade 13.
Value: First Maurice Cody Memorial Scholarship: $400 cash with the tuition allowance for four years, provided Grade A standing is maintained.
Second Maurice Cody Memorial Scholarship: $300 cash.

Arthur Cohen Scholarship

Gift of Mr. Arthur Cohen, B.A. 1903, awarded for general proficiency, including English and French, in Grade 13.
Value: $415 approximately, with the tuition allowance for four years, provided Grade A standing is maintained.

Jacob Cohen Memorial Scholarship

Gift of Mr. Arthur Cohen, B.A. 1903, in memory of his father, awarded for general proficiency, including English and French, in Grade 13.
Value: $415 approximately, with the tuition allowance for four years, provided Grade A standing is maintained.

Sir John Gibson Scholarship

Awarded for general proficiency in Grade 13.
Value: Approximately $262, with the tuition allowance for four years, provided Grade A standing is maintained.

James Harris Scholarships

Gift of Mrs. James Harris, six scholarships, awarded for general proficiency in Grade 13, including the following combinations of subjects:

Latin and Greek
Latin and French
French and German
Modern Languages (any two of French, German, Russian, and Italian or Spanish)
Mathematics and Physics

In awarding one scholarship, preference will be given to a student from Ridley College.

Value: $400, with the tuition allowance for four years, provided Grade A standing is maintained.

Percy Hermant Scholarships

Gift of Sydney Hermant, Esq., two scholarships, awarded for general proficiency in Grade 13.

Value: $350, with the tuition allowance for four years, provided Grade A standing is maintained.

Maurice Hutton Alumni Scholarship

Gift of the University College Alumni Association to commemorate the service of the late Principal Hutton, awarded for general proficiency in Grade 13.

Value: From $350–$650 according to need, with the tuition allowance for four years, provided Grade A standing is maintained.

Reuben Wells Leonard Scholarships

Bequest of the late Colonel R. W. Leonard, ten scholarships, awarded for excellence in any subjects or for general proficiency in Grade 13. Of these, *six* are open to students from any school in the Province, and *four* to candidates from schools outside Metropolitan Toronto.

Value: $300, with the tuition allowance for four years, provided Grade A standing is maintained.

Archibald MacMurchy Memorial Scholarships

Bequest of the late Angus MacMurchy in memory of his father, six scholarships, awarded for general proficiency in Grade 13. Preference will be given students entering the Sir Daniel Wilson Residence or Whitney Hall.

Value: $550.

McCaul Scholarship

Gift of the late Principal Maurice Hutton in memory of President McCaul, awarded for Grade 13 Latin and Greek with preference to a student intending to specialize in Classics.

Value: Approximately $140.

J. S. McLean Scholarships

Gift of the late J. S. McLean, five scholarships, awarded for general proficiency in Grade 13.

Value: Up to $632, with the tuition allowance for four years, provided Grade A standing is maintained.

A Special J. S. McLean Scholarship

Gift of the late J. S. McLean, awarded for general proficiency in Grade 13, with preference to a student entering the Sir Daniel Wilson Residence or Whitney Hall.

Value: Approximately $570.

Michell Scholarship-Bursaries

Bequest of Miss Catherine S. Michell and Colonel William C. Michell, formerly Principal of Riverdale C.I.

Value: Variable, $150 to $500 for candidates from Metropolitan Toronto and $150 to $900 for candidates from outside Metropolitan Toronto. The amount of each award will depend on academic standing and/or financial need, and the value of other awards (except loans) held by each winner will be taken into account. Awards are not automatically renewed, but any balance of income may be used in any year for in-course awards of variable value, but not less than $150. The annual income from this fund is approximately $7,500.

Louis Rosenfeld Scholarship

Bequest of the late Louis Rosenfeld, Esq., awarded for general proficiency in Grade 13.

Value: Approximately $265, with the tuition allowance for four years, provided Grade A standing is maintained.

Thomas A. Russell Scholarships

Bequest of the late Thomas A. Russell, Esq., three scholarships, awarded for excellence in any subjects or for general proficiency in Grade 13, with preference to students entering the Sir Daniel Wilson Residence or Whitney Hall.

Value: $550.

Ann Shepard Memorial Scholarships

Bequest of the late Mrs. Helen Shepard in memory of her daughter Ann, two scholarships: one awarded for Biology; the other for general proficiency to a candidate intending to specialize in Biological Sciences.

Value: $500.

University College Alumnae Scholarship

(Special application required—see page 33)

University College Alumni Scholarships

Gift of the University College Alumni Association, awarded for general proficiency in Grade 13:

(*a*) two scholarships with free tuition:

Value: $350 to $650 each, according to need, with the tuition allowance for four years provided Grade A standing is maintained.

(*b*) two renewable scholarships:

Value: $350 to $650 and $300 to $500 respectively, according to need, renewable for four years, provided Grade A standing is maintained.

(*c*) six or more non-renewable scholarships of variable value.

Malcolm Wallace Scholarships

Gift of the graduates of University College and other friends of the late Professor Malcolm Wallace, former Principal of University College and Head of the Department of English, two scholarships:

(*a*) awarded for excellence in any subjects or for general proficiency;

(*b*) awarded for general proficiency to a student intending to specialize in English.

Value: (*a*) $1,032 with the tuition allowance for four years, provided Grade A standing is maintained. (*b*) approximately $400, with the tuition allowance for four years, provided Grade A standing is maintained.

Morley Wickett Scholarship

Gift of S. R. Wickett, Esq., awarded for proficiency in English and History of Grade 13.

Value: Approximately $130.

TENABLE ONLY IN VICTORIA COLLEGE

Moses Henry Aikins Scholarships

Gift of the late Moses Henry Aikins, B.A. 1855, M.D., three scholarships, two awarded for general ability and one awarded for the humanities subjects of Grade 13.

Value: Two of $350, with the tuition allowance for four years, provided Grade A standing is maintained.

One of $300, with the tuition allowance for four years, provided Grade A standing is maintained.

Charles Earl Auger Alumni Memorial Scholarship

Gift of the alumni of Victoria College in memory of the late Professor C. E. Auger, B.A., awarded for general proficiency in Grade 13.

Value: $400, with the tuition allowance for four years, provided Grade A standing is maintained.

Harold and Ethel Bennett Scholarship

Gift of Professor Bennett (Principal of Victoria College from 1944 to 1959) and his wife, Ethel Granger Bennett, both of the Class of 1915, awarded for general proficiency in Grade 13.

Value: $250, with the tuition allowance for four years, provided Grade A standing is maintained.

Mrs. Walter Brown Scholarship

Gift of the late President Brown, awarded for general proficiency in Grade 13.

Value: $400, with the tuition allowance for four years, provided Grade A standing is maintained.

Mary Ellen Carty Scholarships

Gift of the late Miss Martha Carty in memory of her sister, two scholarships, awarded for general proficiency in Grade 13 to women students from Ontario schools outside Toronto who apply to and live in the Victoria College Women's Residences.

Value: $300.

Class of 1915 Scholarship

Gift of the members of that class in Victoria College, awarded for proficiency in the humanities subjects of Grade 13.

Value: $150, with the tuition allowance for four years, provided Grade A standing is maintained.

Class of 1916 Scholarship

Gift of the members of that class in Victoria College, awarded for proficiency in the Mathematics and Science subjects of Grade 13.

Value: $350, with the tuition allowance for four years, provided Grade A standing is maintained.

Class of 1929 Scholarship

Gift of the members of that class in Victoria College, awarded for general proficiency in Grade 13.

Value: $400, with the tuition allowance for four years, provided Grade A standing is maintained.

Elizabeth Ann Highet Memorial Scholarships

Gift of the late Mary Elizabeth Highet in memory of her mother, three scholarships, awarded (*a*) for general proficiency; (*b*) for the humanities subjects of Grade 13.

Value: (a) $300, with the tuition allowance for four years, provided Grade A standing is maintained.

(*b*) $150, with the tuition allowance for four years, provided Grade A standing is maintained.

$150, with the tuition allowance for four years, provided Grade A standing is maintained.

Irwin Hilliard Scholarship

Gift of the late Dr. Marion Hilliard in memory of her father, awarded for proficiency in the humanities subjects of Grade 13.

Value: $150, with the tuition allowance for four years, provided Grade A standing is maintained.

Florence Warner Lang Scholarship

Gift of the late Professor A. E. Lang, B.A. 1889, M.A., in honour of his wife, awarded for proficiency in the humanities subjects of Grade 13.

Value: $250, with the tuition allowance for four years, provided Grade A standing is maintained.

Joseph N. Leppert Scholarship

Gift of the late Louisa Leppert, awarded for general proficiency in Grade 13.

Value: $350.

William Jackson Little Scholarship

Gift of the late W. J. Little, B.A. 1913, B.D.; awarded for general proficiency in Grade 13 to an applicant intending to specialize in Commerce and Finance. Tenable with a scholarship to which the tuition allowance is attached.

Value: $200.

Leopold Macaulay Scholarship

Gift of Leopold Macaulay, Esq., Q.C., B.A., LL.B., awarded for general proficiency in Grade 13.

Value: $400, with the tuition allowance for four years, provided Grade A standing is maintained.

Clara Flavelle McEachren Scholarship

Gift of Mrs. J. Flavelle Barret and Col. F. F. McEachren in memory of their mother, awarded for general proficiency in Grade 13.

Value: $500, with the tuition allowance for four years, provided Grade A standing is maintained.

Walter Massey Scholarships

Bequest of the late W. E. H. Massey, Esq., two scholarships, awarded for general proficiency in Grade 13.
Value: $300, with the tuition allowance for four years, provided Grade A standing is maintained.

J. H. Riddell Scholarship

Gift of the late Rev. J. H. Riddell, B.A. 1890, D.D., LL.D., awarded for proficiency in Greek and Latin of Grade 13.
Value: $150, with the tuition allowance for four years, provided Grade A standing is maintained.

Robertson Scholarship

Gift of the late Professor J. C. Robertson, M.A., LL.D., awarded for proficiency in Greek of Grade 13 to an applicant intending to specialize in Latin or Greek. It is tenable with any other University scholarship.
Value: $100.

John D. Robins Memorial Scholarship

Gift of former students and friends, awarded for general proficiency in Grade 13.
Value: $200, with the tuition allowance for four years, provided Grade A standing is maintained.

George and Elizabeth Rutherford Scholarships

Gift of the late Mrs. Elizabeth Rutherford, two scholarships, awarded for excellence in the Mathematics and Science subjects of Grade 13.
Value: (a) $300, with the tuition allowance for four years, provided Grade A standing is maintained.
(*b*) $200, with the tuition allowance for four years, provided Grade A standing is maintained.

Charles Bruce Sissons Memorial Scholarship

Gift of former students and friends, awarded for proficiency in the humanities subjects of Grade 13.
Value: $200, with the tuition allowance for four years, provided Grade A standing is maintained.

Mrs. F. N. G. Starr Memorial Scholarships

Gift of the late Mrs. F. N. G. Starr, two scholarships, awarded for general proficiency in Grade 13. Open to male candidates only.
Value: $300, with the tuition allowance for four years, provided Grade A standing is maintained.

James C. Taylor Memorial Scholarship

Gift of the late W. E. Taylor, Esq., in memory of his son, James C. Taylor, B.A. 1936, awarded for general proficiency in Grade 13.
Value: $300, with the tuition allowance for four years, provided Grade A standing is maintained.

Elizabeth Burr Tyrrell Scholarship

Gift of the late Dr. J. B. Tyrrell in memory of his mother, awarded for general proficiency in Grade 13.
Value: $300, with the tuition allowance for four years, provided Grade A standing is maintained.

Varsity Fund (Victoria) Scholarships

Gift of Victoria College graduates, five scholarships awarded for general proficiency in Grade 13.

Value: $300 each, with the tuition allowance for four years, provided Grade A standing is maintained.

Victoria Alumni-Alumnae Scholarship-Bursaries

See page 33 for conditions.

Victoria College Alumni-Alumnae Scholarship

Gift of the men and women graduates of Victoria College, awarded for general proficiency in Grade 13.

Value: $400, with the tuition allowance for four years, provided Grade A standing is maintained.

Victoria College Alumni Residence Scholarships

Gift of the men and women graduates of Victoria College, four scholarships, awarded for general proficiency in Grade 13 to applicants applying for residence at Victoria College.

Value: $300.

George H. West Scholarships

Established by the bequest of the late Sarah Margaret West in memory of her husband, two scholarships, awarded for general proficiency in Grade 13 to applicants applying for residence at Victoria College.

Value: $350 each.

E. R. Wood Memorial Scholarship

Gift of the late Mrs. E. R. Wood, awarded for general proficiency in Grade 13.

Value: $300, with the tuition allowance for four years, provided Grade A standing is maintained.

TENABLE ONLY IN TRINITY COLLEGE

Lila Best Scholarship

Named in memory of the late Lila Best, 1912, awarded to a woman student for proficiency in Grade 13.

Value: $235.

F. A. Bethune Scholarship

Gift of the Trustees of the F. A. Bethune Memorial Fund, awarded for proficiency in Classics in Grade 13 and open only to students from Trinity College School, Port Hope, Ontario, who enrol in the first year at Trinity College.

Value: $100.

Burnside Scholarship

Founded in memory of the late Dr. Alexander Burnside, awarded for proficiency in Mathematics and Science (Physics and Chemistry) in Grade 13 to a student entering the first year at Trinity College.

Value: College tuition for four years, provided Grade A standing maintained plus $100 in first year.

Alice Hélène Clarkson Scholarship

Founded in memory of the late Mrs. A. Hélène Clarkson, awarded for general proficiency in Grade 13 to an applicant entering the first year at Trinity College.
Value: $225.

College Scholarship (Trinity)

Awarded for general proficiency in Grade 13 to a student entering the first year at Trinity College.
Value: College tuition for four years, provided Grade A standing maintained plus $100 in first year.

Provost F. H. Cosgrave Scholarship

Founded in honour of the Reverend F. H. Cosgrave, D.D., Sixth Provost of the College, and awarded to a student entering the first year at Trinity College, for general proficiency in Grade 13.
Value: College tuition for four years, provided Grade A standing maintained plus $100 in first year.

Dickson Scholarships

Gift of the late William Dickson, Esq., two scholarships, one awarded for proficiency in Modern Languages, and one for proficiency in English, French, History, and Latin in Grade 13 to candidates entering the first year at Trinity College.
Value: College tuition plus $100 for four years, provided Grade A standing is maintained.

Irene Dinnick Holford Scholarship

Founded by Mr. William H. Holford, awarded for general proficiency in Grade 13 to an applicant entering the first year at Trinity College, with preference given to a student from a rural area.
Value: College tuition for four years, provided Grade A standing maintained plus $100 in first year.

Maria Janes Scholarship

Established by a bequest from the late Louisa Cornelia Janes in memory of her mother, awarded to a student entering the first year at Trinity College, for general proficiency in Grade 13.
Value: $450.

Simeon Janes Scholarship

Established by a bequest from the late Louisa Cornelia Janes in memory of her father, awarded to a student entering the first year at Trinity College, for general proficiency in Grade 13.
Value: $450.

Professor William Jones Scholarship

Founded in memory of the late Reverend William Jones, M.A., D.C.L., by relatives and friends, awarded for proficiency in Mathematics to an applicant from Trinity College School, Port Hope, who enrols in the first year at Trinity College.
Value: $360.

Peter Larkin Scholarship

Founded in memory of the late Honourable Peter Larkin, awarded for general proficiency in Grade 13 to an applicant entering the first year at Trinity College.

Value: College tuition for four years, provided Grade A standing maintained plus $100 in first year.

John Herbert McConnell Scholarship

In memory of the late Dr. John Herbert McConnell, 9T7, awarded for general proficiency in Grade 13 to an applicant entering the first year at Trinity College.

Value: College tuition for four years, provided Grade A standing maintained plus $100 in first year.

Leonard McLaughlin Scholarship

Endowed by the late Mr. and Mrs. Michael McLaughlin in memory of their son, awarded for proficiency in Classics to an applicant from Upper Canada College entering the first year at Trinity College.

Value: $600, payable over two years.

Claude George Pascoe Scholarship

Founded by the late Phyllis Maude Pascoe in honour of her husband, awarded for proficiency in Biology in Grade 13 to a student entering the first year at Trinity College.

Value: $920 over two years.

Bishop Strachan Scholarship

Founded in memory of the first Bishop of Toronto, awarded for excellence in English, French, Greek, and Latin in Grade 13 to an applicant entering the first year at Trinity College.

Value: College tuition for four years, provided Grade A standing maintained plus $100 in first year.

Chancellor Strathy Scholarship

Founded in honour of the late Gerard Brakenridge Strathy, Sixth Chancellor of Trinity College and awarded to a student entering the first year at Trinity College, for general proficiency in Grade 13.

Value: in excess of $800, payable $400 per year in succeeding years depending on interest available.

Pat Strathy Memorial Scholarship

Founded in memory of the late Sub-Lieutenant G. H. K. Strathy, R.C.N.V.R., by members of his family. Awarded to the student with the highest marks in Grade 13 Mathematics A and B, Physics and Chemistry, with preference given to students from Trinity College School, Port Hope, or from Upper Canada College, St. Andrew's College, or Ridley College. The student is normally required to live in residence.

Value: $400 annually for four years, provided Grade A standing is maintained.

Upper Canada-Trinity Scholarship

Gift of an Old Boy of Upper Canada College, awarded to a candidate matriculating from Upper Canada College and enrolling in the first year in Trinity College.

Value: $250.

Wellington Scholarships

Founded by the first Duke of Wellington, two scholarships, one awarded for proficiency in Classics, and one for proficiency in Mathematics A in Grade 13 to applicants entering the first year at Trinity College.

Value: College tuition for four years, provided Grade A standing maintained.

TENABLE ONLY IN ST. MICHAEL'S COLLEGE

H. S. Bellisle Memorial Scholarship

Awarded for general proficiency in Grade 13.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

C. L. Burton Scholarships

Gift of the late C. L. Burton, Esq., C.B.E., LL.D., eight scholarships awarded for general proficiency in Grade 13 or an equivalent examination to students entering any degree course at St. Michael's College.

Value: $150–$250 allowance on tuition for four years provided Grade A standing is maintained.

Henry Carr Scholarship

Awarded for general proficiency in Grade 13.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

Catholic Women's League Scholarship

Awarded for general proficiency in Grade 13 to a woman student from Metropolitan Toronto.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

Honourable John Elmsley Memorial Scholarship

Awarded for general proficiency in Grade 13.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

Fontbonne Scholarship

Awarded for proficiency in French and Latin of Grade 13.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

Etienne Gilson Scholarship

Awarded for general proficiency in Grade 13.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

Honourable H. T. Kelly Memorial Scholarship

Awarded for general proficiency in Grade 13.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

Thomas Kirby Memorial Scholarship

Awarded for general proficiency in Grade 13.
Value: $250 allowance on tuition for four years, provided Grade A standing is maintained.

Eileen Larkin Memorial Scholarships

Twelve scholarships provided for general proficiency in Grade 13.
Value: $150–$250 allowance on tuition for four years, provided Grade A standing is maintained.

Gertrude Lawlor Memorial Scholarship

Awarded for proficiency in English and History of Grade 13.
Value: The tuition allowance for four years, provided Grade A standing is maintained.

Loretto Alumnae Scholarship

Awarded for proficiency in English and History of Grade 13.
Value: The tuition allowance for four years, provided Grade A standing is maintained.

McBrady Scholarship

Awarded for general proficiency in Grade 13.
Value: The tuition allowance for four years, provided Grade A standing is maintained.

J. J. McGrand Memorial Scholarship

Awarded for general proficiency in Grade 13.
Value: The tuition allowance for four years, provided Grade A standing is maintained.

The John Melady Memorial Scholarship

Awarded for general proficiency in Grade 13, or its equivalent.
Value: The tuition allowance for four years, provided Grade A standing is maintained.

Hugh Murray Memorial Scholarship

Awarded for general proficiency in Grade 13.
Value: The tuition allowance for four years, provided Grade A standing is maintained.

Mother Estelle Nolan Scholarship

Awarded for proficiency in French and Latin of Grade 13.
Value: The tuition allowance for four years, provided Grade A standing is maintained.

St. Michael's Varsity Fund Scholarships

Fifteen scholarships awarded for general proficiency in Grade 13 to students entering any degree course at St. Michael's College.
Value: $150–$250 allowance on tuition for four years, provided Grade A standing is maintained.

Teefy Memorial Scholarship

Awarded for proficiency in Mathematics A and B, in Grade 13.
Value: The tuition allowance for four years, provided Grade A standing is maintained.

Mary Ward Scholarship

Awarded for proficiency in English and two of German, Italian, Latin, Spanish of Grade 13.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

Sister Perpetua Whalen Scholarship

Awarded for general proficiency in the prescribed subjects.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

Sir Bertram Windle Scholarship

Awarded for proficiency in English and two of French, German, Greek, Latin of Grade 13.

Value: The tuition allowance for four years, provided Grade A standing is maintained.

TENABLE ONLY IN NEW COLLEGE

New College Council Scholarships

Awarded to students entering degree courses in any Faculty.

Value: $150.

New College Varsity Fund Admission Scholarships

Three scholarships, awarded to students entering the Faculty of Arts and Science.

Value: $350; renewable at increased value ($500) if Grade A standing is maintained.

Lillian Waddell Admission Scholarship

Gift of the late Lillian A. Waddell; awarded to a student entering the Faculty of Arts and Science.

Value: One half the annual income from the fund (approximately $450).

Wetmore Scholarship

Gift of the Laidlaw Foundation and other friends of the late Principal Wetmore; awarded to a student entering a degree course in any Faculty.

Value: The annual income from the fund (approximately $500).

TENABLE ONLY IN INNIS COLLEGE

Innis College Varsity Fund Admission Scholarships

A maximum of three Scholarships, awarded to students entering degree courses in any Faculty and registering at Innis College.

Value: $350 in the first year and $500 in each succeeding year of the undergraduate course, to a maximum of four years, provided Grade A standing is maintained.

TENABLE ONLY IN SCARBOROUGH COLLEGE

The Agincourt Lions Club Scholarship

Gift of the Agincourt Lions Club, this scholarship is awarded to a student with First Class standing entering Scarborough College directly from any secondary school in the Borough of Scarborough.

Value: $300.

Landon Bladen Scholarship

Gift of Professor V. W. Bladen, this scholarship is awarded to a student with First Class standing entering the first year at Scarborough College.
Value: $300.

Borough of Scarborough Admission Scholarship

One of a number of gifts of the Borough of Scarborough (through the good offices of the Scarborough College Foster Alumni Association), this scholarship is awarded to a student with First Class standing entering the first year at Scarborough College.
Value: $350.

I.O.D.E. Isabel Rutter Chapter Admission Scholarship

One of three gifts of the Imperial Order Daughters of the Empire, Isabel Rutter Chapter, this scholarship is awarded to a student with First Class standing entering Scarborough College directly from any secondary school in the Borough of Scarborough.
Value: $200.

Scarborough College Foster Alumni Association Admission Scholarship

One of several gifts from the Scarborough College Foster Alumni Association, this scholarship is awarded to a student with First Class standing entering the first year at Scarborough College.
Value: $350.

Scarborough College Open Admission Awards

Awarded from funds allocated by the Senate of the University of Toronto, a number of awards will be granted to students with high standing entering the first year at Scarborough College. The number, value, and criteria for these awards will be determined by the Scarborough College Council with reference to the standing of the applicants.

Scarborough College-Varsity Fund Continuing Scholarships

Gift of the Varsity Fund, four continuing scholarships are awarded to students with high First Class standing entering the first year at Scarborough College.
Value: $350 in the first year and $500 for each subsequent year. Continuation of the awards is conditional on the maintenance of Grade A standing.

Township of Pickering Admission Scholarship

One of two gifts of the Township of Pickering, this scholarship is awarded to a student with high standing entering the first year at Scarborough College. Preference is given to Township of Pickering students.
Value: $250.

TENABLE ONLY IN ERINDALE COLLEGE

Erindale-Cooksville Lions Club Centennial Awards

Awarded annually to students living in the area served by the Erindale Cooksville Lions Club.
Value: Two of $150.

Erindale College Open Admission Awards

Awarded from funds allocated by the Senate of the University of Toronto, a number of awards will be granted to students with high standing entering the first year at Erindale College. The number, value, and criteria for these awards will be determined by the Erindale College Council with reference to the standing of the applicants.

Oakville University Women's Club Award

Awarded annually to a female graduate of an Oakville Secondary School. Value: $200.

Varsity Fund National Admission Scholarships

Four awards, tenable through the duration of the course provided Grade A standing is maintained.

Value: $350 for the first year and $500 for each subsequent year.

* * * *

In addition to the scholarships listed in Section I(b) above, students entering one of the Colleges will be considered for all awards listed under Section I(a) and tenable in the Faculty or School in which they plan to register; they may also apply for any appropriate award listed in Sections II and III.

SECTION II

Students wishing to be considered for the following awards (asterisked) should complete Section I and Sections II and/or III of the university admission scholarship application, giving any additional information required in the award descriptions.

Alcan Scholarship*

Tenable in the Faculty of Arts and Science, the Faculty of Applied Science and Engineering, or in the Faculty of Law.

Gift of the Aluminum Company of Canada Limited, awarded to a student with high standing in Grade 13 and financial need, who registers in the Faculty of Arts and Science, the Faculty of Applied Science and Engineering, or in the Faculty of Law. The award is renewable in each year of the course, provided Grade A standing is maintained. Complete the statement of financial need on the scholarship application form. As each award is tenable for a possible four years and only one shall be outstanding in any year, the next Alcan Scholarship will become available in the session 1973–74.

Value: $500 to the student and $300 as a grant-in-aid to the University in each year of award.

Alumni Association War Memorial Scholarships*

Tenable in any first degree course.

Gift of the Alumni, six scholarships are awarded annually by the War Memorial Scholarship Committee of the University of Toronto Alumni Association, for general proficiency. In addition to academic performance, the Committee of Award will take into consideration the candidate's relationship to active service in the Armed Forces of Canada, need of financial assistance, merit shown by participation and interest in extra-curricular activities, and such other qualifications as may commend themselves to the Committee. These awards are tenable for two years provided satisfactory academic standing is maintained. ONE scholarship will be available to a student whose home is NOT in the Province of Ontario. Complete the statement of financial need on the scholarship application form and attach evidence of relationship to active service in the Armed Forces of Canada.

Value: $500 annually for a possible two years.

Apply: *Students resident in Ontario* should use the university admission scholarship application.

Students resident outside Ontario should obtain the necessary forms from the Office of Student Awards, University of Toronto, Toronto 5, Ontario.

Mary H. Beatty Admission Scholarships* (see page 6)

Value: $600–$1,000 annually as may be determined by the financial need of recipient. Complete the statement of financial need if an award greater than $600 is desired.

J. W. Billes Admission Scholarships* (see page 6)

Value: A minimum of $250 and a maximum of $1,500 in each year of the scholar's course. Complete the statement of financial need if an award greater than $250 is desired.

Forestry Memorial Admission Scholarship*

Tenable in the Faculty of Forestry.

Gift of the Forestry Alumni Association, awarded to the candidate who obtains an average of at least 75% in the Grade 13 subjects required for

admission to the Faculty of Forestry. Complete the statement of financial need if an award of greater value than $200 is desired.
Value: $200–$600 dependent upon financial need.

John Lewis Foster Scholarship*

Tenable in the Faculty of Forestry.
Gift of the Messrs. K. H., C. W., C. B., and J. E. Foster in memory of their father, awarded to a student who has completed the University admission requirements after at least two years' attendance at a high school or collegiate institute in the Counties of Hastings, Peterborough, Frontenac, Lennox and Addington. The basis of award will be standing of at least Second Class Honours in Grade 13, but physical fitness and financial need will also be taken into consideration. Complete the statement of financial need on the scholarship application form.
Value: $250.

Globelite Batteries Limited Bursary*

Tenable in any course.
Gift of Globelite Batteries Limited; awarded on the basis of academic standing and financial circumstances to a student entering the University of Toronto from an Ontario high school. Preference shall be given to the son or daughter of an employee of the Company, but failing qualified applicants among employees' children, the bursary may be awarded to any other suitably qualified student.
Value: $500. (At the discretion of the selection committee, two bursaries of $250 each may be awarded in place of one of $500.)
Apply: On the University of Toronto admission scholarship application form. Candidates must notify the Office of Student Awards in writing that they have submitted the form of application and wish in addition to be considered for the Globelite Batteries Limited Bursary.

Reginald and Galer Hagarty Scholarship*

Tenable in the Faculty of Applied Science and Engineering.
The bequest of the late Charlotte Ellen Hagarty provides, in memory of her husband and sons, a scholarship to be awarded to a pupil of Harbord Collegiate Institute, Toronto, who, in the subjects of English, one language other than English, and Mathematics of Grade 13 stands highest among the students of that school who register in the Faculty of Applied Science and Engineering, obtains at least a pass mark in each of the said subjects, and signs a declaration to the effect that he is willing to take up arms in defence of Canada and the British Empire.
Value: $80 approximately.

Inco Scholarship*

Tenable in the Faculty of Arts and Science and the Faculty of Applied Science and Engineering, with preference being given to students in mining and metallurgical engineering.
The International Nickel Company of Canada, Limited has established an annual scholarship to be awarded on the basis of outstanding performance in Grade 13, and financial need. Applicants must enrol in the Faculty of Applied Science and Engineering or in the Faculty of Arts and Science; and must complete the statement of financial need on the scholarship application form. Those entering the Faculty of Arts and Science must intend to specialize in one of the following fields: Mathematics, Physics, Chemistry, Geology or Geophysics.
Value: In each of the four undergraduate years: $300 cash, with complete tuition, provided satisfactory standing is maintained in an eligible course.

Independent Order of Foresters, High Court of Central Ontario, Scholarships

Tenable in any degree course.
Two Awards by the Independent Order of Foresters, High Court of Central Ontario, open to their members or the children of their members, who obtain an average of 70% in Grade 13 after spending one year only in Grade 13.
Value: $750 per year for two years provided that satisfactory standing is maintained.
Apply on the regular university admission scholarship application form giving details of court and certificate number.

Miriam Lavine Isaacs Memorial Bursary*

Tenable in any first degree or diploma course.
Gift of the Delta Phi Epsilon Alumnae Association, awarded to a woman graduate of Harbord Collegiate Institute, Toronto, who enrols in the First Year of any degree or diploma course, demonstrates financial need, and has at least Second Class Honours standing on the work of Grade 13. Complete the statement of financial need on the scholarship application form.
Value: $50.

John Macara, Barrister of Goderich, Scholarship*

Tenable in any first degree course.
Gift of the late Mrs. Jean Glasgow in memory of her father, awarded for general proficiency in Grade 13 with preference given applicants who are related to the late Mrs. Jean Glasgow.
Value: One half of the annual income from the fund (approximately $500).
Apply: Separate application is not required; please indicate in section II of the application form whether this relationship exists in your case.

John Wolfe McColl Memorial Awards*

Tenable in the Faculty of Arts and Science, and the Faculty of Applied Science and Engineering.
Bequest of the late John Wolfe McColl, two awards, one available in each of the Faculties of Arts and Science, and Applied Science and Engineering, to students entering University from Grade 13. Applicants must have obtained First Class Honours in Grade 13, and must demonstrate financial need. In the Faculty of Arts and Science, the candidate must intend to specialize in either Commerce and Finance or Political Science and Economics; in the Faculty of Applied Science and Engineering, either Engineering Science or Chemical Engineering. Complete the statement of financial need on the scholarship application form.
Value: $250–$750, determined by the applicant's financial need.

John McCrae Scholarship*

Tenable in any first degree course.
Established by friends of the late Lt.-Col. John McCrae, awarded on the basis of standing and need, with preference given to a male matriculant from Guelph Collegiate Institute. This scholarship is awarded in alternate years, and is tenable with other University awards. The next McCrae Scholarship will become available in the session 1970–71. Complete the statement of financial need on the scholarship application form.
Value: Approximately $300 annually, to be enjoyed in each year of the course, so long as the student maintains academic standing satisfactory to the Committee of Award.

Motor Vehicle Safety Association Bursary*

Tenable in any first degree course.
Gift of the Motor Vehicle Safety Association, awarded to a candidate who obtains an average of at least 70% in Grade 13, who displays characteristics of reliability, honesty and co-operativeness and who demonstrates financial need, with preference to graduates of Metropolitan Toronto Secondary Schools. Complete the statement of financial need on the scholarship application form.
Value: One or more bursaries to a total value of $300.

Municipal Chapter of Toronto I.O.D.E. Scholarship in the Humanities and Social Sciences*

Tenable in the Faculty of Arts and Science.
Gift of the Municipal Chapter of Toronto, I.O.D.E.; awarded to a Grade 13 graduate from a secondary school in Metropolitan Toronto who intends to specialize in a humanities or social science field at the University of Toronto. Canadian citizenship is required, unless the applicant's family has not been resident in Canada long enough to be eligible for citizenship. Complete the statement of financial need on the scholarship application form.
Value: $400.
Apply: Separate application is not required; the I.O.D.E. Committee of Award will select the winner from among the students who have submitted applications for U. of T. admission scholarships and who meet the conditions mentioned above.

Municipal Chapter of Toronto I.O.D.E. Scholarship in Pure and Applied Science*

Tenable in the Faculty of Arts and Science and the Faculty of Applied Science and Engineering.
Gift of the Municipal Chapter of Toronto I.O.D.E.; awarded to a Grade 13 graduate from a secondary school in Metropolitan Toronto who intends to specialize in science at the University of Toronto. Canadian citizenship is required, unless the applicant's family has not been resident in Canada long enough to be eligible for citizenship. Complete the statement of financial need on the scholarship application form.
Value: $400.
Apply: Separate application is not required; the I.O.D.E. Committee of Award will select the winner from among the students who have submitted applications for U. of T. admission scholarships and who meet the conditions mentioned above.

Nisei Students' Club Bursary*

Tenable in any first degree course.
Gift of the Nisei Students' Club, awarded annually to one or more Japanese-Canadian students (persons of Japanese ancestry living in Canada) who attain at least Second Class Honour standing in Grade 13, demonstrate financial need, and enter any full-time undergraduate course. Candidates who at the time of award are in receipt of other awards in excess of $600 will not be considered. Complete the statement of financial need on the scholarship application form.
Value: The annual income from the fund (approximately $125).
Apply: Separate application is not required; please indicate your eligibility in section II of the application form.

Ontario Hockey Association War Memorial Scholarship*

Tenable in any first degree course.

Gift of the above Association, awarded on the basis of standing in Grade 13 and financial need, to an applicant whose father served overseas with the Canadian Forces. Complete the statement of financial need on the scholarship application form, and attach your father's discharge certificate.

Value: Annual income from the fund but not less than $100, with an allowance of the same amount on tuition for four years, provided Grade A standing is maintained.

The Helen E. Rogers Admission Awards* (see page 7)

Value: $250–$1,500 annually as may be determined by the financial need of the applicant. Complete the statement of financial need if an award greater than $250 is desired.

Edwin Sandler Memorial Bursary*

Tenable in the Faculty of Arts and Science.

Gift of Mr. and Mrs. Benjamin Ulster, one or more bursaries, awarded to students who obtain at least Second Class Honour standing in Grade 13, demonstrate financial need, and register in the First Year in the Faculty of Arts and Science. The winner may continue to enjoy this award in higher years provided his need is established each year and at least a B average is maintained. Complete the statement of financial need on the admission scholarship application form. As this award is tenable for a possible four years and only one shall be outstanding in any year, the next Sandler Memorial Bursary will become available in the session 1972–73.

Value: One or more bursaries of a total annual value of $200.

Steel Company of Canada Admission Bursary*

Tenable in any course.

The Steel Company of Canada offers a bursary on the basis of at least 66% standing in Grade 13 and financial need, to a student who is a permanent resident of Canada and is registered in the first year of any course. The bursary is tenable for a maximum of four years, provided that Grade B standing is maintained. It is not tenable with scholarships totalling more than $200 but may be held with other bursaries. Complete the statement of financial need on the scholarship application form.

Value: $500 annually for a possible four years.

Walter Sterling Admission Scholarships* (see page 7)

Value: $250–$1,500 annually as may be determined by the financial need of the applicant. Complete the statement of financial need if an award greater than $250 is desired.

Hugh Innis Strang Memorial Scholarship*

Tenable in the Faculty of Arts and Science.

Gift of the former students of the Goderich Collegiate Institute in memory of Dr. H. I. Strang, awarded to the student of the Institute, who, fulfilling the conditions for entrance to the Faculty of Arts and Science, ranks highest in Grade 13. The order of preference shall be: (1) Classics and English; (2) English, Latin and a modern language; (3) English, Latin, and Mathematics or Science; (4) Any other grouping approved by the

Committee of Award. Scholarship, need of assistance, and the record of a candidate in school activities, shall be the main consideration in making the award. If in any year there is no award to a student entering the Faculty of Arts and Science, a student who proposes to enrol in any other Faculty may be considered a candidate for the scholarship, provided that he obtains complete standing in the Grade 13 subjects prescribed for admission to the Faculty which he desires to enter. Tenable with other University awards. Complete the statement of financial need on the admission scholarship application form.

Value: Not less than $100, with an allowance of the same amount on tuition for four years, provided Grade A standing is maintained.

Varsity Fund National Admission Scholarships* (see page 7)

Value: $250–$1,500 annually as may be determined by the financial need of the applicant. Complete the statement of financial need on the scholarship application form if an award greater than $250 is desired.

SECTION III

ALL AWARDS IN THIS SECTION REQUIRE SEPARATE APPLICATION

SECTION III A

THE FOLLOWING ARE OPEN TO THE MAJORITY OF APPLICANTS

FORMS AVAILABLE FROM COLLEGES, FACULTIES OR SCHOOLS IN THE UNIVERSITY OF TORONTO

American Society for Metals (Ontario Chapter) Bursaries

Tenable in the Faculty of Applied Science and Engineering.
The Ontario Chapter, the American Society for Metals, provides 6 bursaries for undergraduate students in Metallurgy and Materials Science. The awards are made on the basis of academic standing and demonstrated financial need.
Value: $150 each.
Apply: By letter, to the Secretary of the Faculty of Applied Science and Engineering by September 1.

Billes Bursaries

Tenable in Victoria College.
A bequest from the John W. Billes Estate furnished funds to provide financial assistance for certified candidates for the United Church ministry. It is hoped that the availability of these bursaries will encourage qualified candidates to consider entering courses as preparation for their work in theology.
Apply: The Registrar of Victoria College.

Canada Student Loans Plan

Full details of this Plan are available in a brochure issued by the Government of Canada which may be obtained at all eligible post-secondary institutions in Ontario. Students not eligible under the Ontario Student Awards Program may apply for a Canada Student Loan provided they are attending an institution in Canada or abroad which has been designated as eligible for Canada Student Loans only. The application form for the Ontario Student Awards Program is also used for the Canada Student Loans Plan.
Apply: Director of Student Awards, Department of University Affairs, 481 University Avenue, Toronto 2, Ontario, or, if attending an institution in Ontario, at the university in which the student is enrolled or plans to enrol.

College Bursaries

Tenable in the Faculty of Arts and Science.
In addition to the scholarships offered by each of the Colleges, a number of bursaries are also available to students who enter one of the Colleges with a high standing in Grade 13 and a definite need of financial assistance to continue their education.
Value: Variable.
Apply: The Registrar of the particular College in which the student plans to enrol.

Dominion Magnesium Limited Bursary

Tenable in the Faculty of Applied Science and Engineering.
Dominion Magnesium Limited offers a bursary to an applicant who demonstrates financial need, satisfies the academic requirements for admission, and enrols in the First Year of the Metallurgy and Materials Science course in the Faculty of Applied Science and Engineering.
Value: $400.
Apply: By letter, to the Secretary of the Faculty of Applied Science and Engineering, not later than September 1.

Rho Pi Phi Bursary

Tenable in the Faculty of Pharmacy.
Gift of Nu Chapter, Rho Pi Phi Fraternity, awarded on the basis of satisfactory academic standing in Grade 13 and financial need.
Value: $200.
Apply: The Secretary of the Faculty of Pharmacy, for application forms which must be submitted by September 1.

School of Nursing Alumnae Bursaries

Awarded to students who have good academic standing and are in need of financial assistance.
Apply: By August 15, to the Secretary, School of Nursing.

University College Alumnae Scholarship

Tenable in University College.
Awarded for general proficiency to a woman student who is the daughter of an Alumna of University College.
Value: $300.
Apply: The Registrar of University College BEFORE MAY 1.

Victoria Alumni-Alumnae Scholarship-Bursaries

Tenable in Victoria College.
Gift of the Alumni-Alumnae of Victoria College, a variable number of awards, open to applicants who obtain an average of 75% or more in Grade 13 and demonstrate financial need.
Value: Up to $500 depending on need.
Apply: The Registrar, Victoria College, after final Grade 13 marks have been received.

FORMS AVAILABLE FROM VARIOUS SOURCES

Board of Education Scholarships and Bursaries

Tenable in most degree courses.
Some Boards of Education offer university admission awards to students matriculating from high schools under their jurisdiction. In some cases, the candidates must intend to teach in one of the district schools for a period after graduation.
Value: Variable.
Apply: The local Board of Education.

Business and Professional Women's Club Scholarships and Bursaries

Tenable in most degree courses.
Several branches of the B and P Club offer university admission awards, generally open to candidates from the particular town or district in which the Club is located.
Value: Variable.
Apply: The local Business and Professional Women's Club.

Canadian Federation of University Women–Local Club Scholarships and Bursaries

Tenable in most degree courses.
Several clubs and alumnae associations offer university admission awards, generally open to women students from the locality.
Value: Variable.
Apply: The local C.F.U.W. Club.

Carter Scholarships

Tenable in any first degree course.
Gift of the late J. I. Carter, awarded by the Department of Education upon the results of the Grade 13 examinations.
Value: $100, $60, $40 to the students standing First, Second, Third in each area.
Apply: Full particulars are obtainable from high school Principals.

Children of War Dead (Education Assistance) Act

Tenable in any course.
The Government of Canada (Department of Veterans' Affairs) provides fees and monthly allowances for children of deceased persons whose death has been ruled attributable to military service.
Value: Monthly maintenance allowance plus tuition fees not exceeding $800 in any academic year.
Apply: The nearest District Office of the Department of Veterans' Affairs.

Devonshire Loan Fund

Tenable in any course.
This Fund has been established by graduates and friends of Devonshire House to assist students in the Residence.
Value: Variable.
Apply: The Dean of Devonshire House.

I.O.D.E. Bursaries

Tenable in any course.
Several chapters of the I.O.D.E. grant bursaries to students who have difficulty in financing their university study. Some awards are made upon the recommendation of the university student awards office, some directly by the chapter concerned.
Value: Variable.
Apply: In the first instance, to the local chapter of the I.O.D.E.

Kiwanis Club Scholarships and Bursaries

Tenable in most degree courses.
Several clubs grant university admission awards, generally to candidates from the town or district in which the Club is located.
Value: Variable.
Apply: The local Kiwanis Club.

Leonard Foundation Scholarships

Tenable in any first degree course.
Awarded each year by the Leonard Foundation, these scholarships are open to applicants who are nominated by a member of the General Committee. Preference is given to sons and daughters of clergymen, school teachers, servicemen and veterans of Her Majesty's forces, graduates of the Royal Military College of Canada, members of the Mining and Metallurgical

Institute of Canada. In the Faculty of Arts and Science in the University of Toronto, an applicant must register at University College, New College, Innis College, Scarborough College or Erindale College.
These awards are administered and granted entirely by the Foundation, from whom all further information may be obtained.
Apply: The Leonard Foundation, c/o Canada Permanent Trust Company, 320 Bay Street, Toronto, before March 31.

Navy League Scholarships

Tenable in any first degree course.
The Navy League of Canada annually awards nine university entrance scholarships to Sea Cadets and ex-Sea Cadets and one for Wrenettes. Not tenable by students enrolled in the Armed Services on any basis whereby the Government provides free tuition or grants.
Value: $300.
Apply: By letter, to the Navy League of Canada, National Council, Suite 910, 85 Range Rd., Ottawa 2, Ontario, by August 1.

Ontario Scholarships

Tenable in any course.
The Province of Ontario awards an Ontario Scholarship to all students who achieve an average of 80% or better in papers worth seven credits, as required for the Ontario Secondary School Honour Graduation Diploma. These students will be designated "Ontario Scholars". Each language counts as two credits.
Value: $150.
No application is required.

Ontario Student Awards Program

All students who are residents of Ontario and who satisfy the admission requirements of a Canadian university or an eligible post-secondary institution in Ontario may apply for an award under this Program. To receive an award, a student must establish a need for assistance and enrol in an eligible institution in a course other than Divinity in the year of award. An award under this Program will be made to the extent of established need in a combination of a non-repayable grant and a Canada Student Loan.
Apply: On application forms available at The University of Toronto, Office of Student Awards, and all post-secondary eligible institutions.

P.E.O. Sisterhood Educational Fund

Tenable in any course.
Available to women students for educational purposes, these loans bear interest at 4% per annum from the date of each note, with additional loans possible, provided the applicant maintains the scholastic average required for graduation.
Value: $900 maximum for undergraduate students for any one year.
Apply: A local chapter of P.E.O., or the Ontario Provincial Chairman, 35 Cheritan Avenue, Toronto 310, Ontario.

Professional Engineers' Wives' Association of Ontario Bursaries

Tenable in the Faculty of Applied Science and Engineering.
Gift of the above Association, awarded to students entering First Year Engineering, who have good academic standing and are in need of financial assistance. Administered entirely by the Association, where further details are available.

Value: Maximum of $500 each.
Apply: The Chairman of the Association, 14 Kingsborough Crescent, Weston, Ontario.

Registered Nurses' Association of Ontario Bursary

Tenable in the School of Nursing.
Awarded to a candidate entering the first year of a basic degree course in Nursing at a university school of nursing in Ontario, who has been accepted for admission to the School, has good academic standing, and is in need of financial assistance.
Value: $475 annually for four years.
Apply: Executive Director, Registered Nurses' Association of Ontario, 33 Price Street, Toronto 289, before September 1.

Regular Officer Training Plan

Tenable in approved degree courses.
Scholarships are available to Canadian citizens who undertake to serve in the armed forces for at least four years after graduation.
Value: Tuition, books, incidentals plus $193 per month.
Apply: Director of Recruiting, Canadian Forces Headquarters, Ottawa 4, Ontario, or any recruiting unit. (Toronto: Canadian Forces Recruiting Centre, 25 St. Clair Ave. East, Toronto 7, Ontario.)

Royal Canadian Legion and Ladies' Auxiliary Bursaries

Tenable in any first degree course.
The Ontario Command Royal Canadian Legion offers bursaries to secondary school graduates entering University. These will be awarded to persons who are eligible for membership in the Canadian Legion or to the children of parents, either of whom is eligible for membership in the Canadian Legion. The selection will be based upon documentary verification that the student has been admitted to University for the present scholastic year.
Value: At least 63 of $500 each for 1970/71.
Apply: By May 31, to Mr. P. Biggs, Provincial Secretary, Ontario Command Royal Canadian Legion, 218 Richmond Street West, Toronto 2B. Forms are obtainable from Legion Branches, Royal Canadian Legion, from high school Principals, or from the Provincial Secretary.

Royal Canadian Legion Scholarships

Each year the Dominion Command of The Royal Canadian Legion awards one or more scholarships.
Apply: To the Dominion Command, The Royal Canadian Legion, 465 Gilmour Street, Ottawa 4, where further information may be obtained.

Toronto Kiwanis Charity Fund Inc.

Tenable in any course.
In association with the Kiwanis Club of Toronto, the above Fund offers loans to students of good scholastic standing who require financial assistance before considering a university education. The continuing support of the recipient would depend on his or her showing some promise of achievement and maintaining a good standing.
Value: Variable.
Apply: Toronto Kiwanis Charity Fund Incorporated, Royal York Hotel, Toronto.

SECTION III B

The Following Will Interest Limited Groups Only

The Associates of the University of Toronto Admission Scholarship

Tenable in any degree course.
Gift of the Associates of the University of Toronto Inc. New York; one or more scholarships annually, to a total value of $1,500 awarded to a student from the United States who has obtained at least first class standing or the equivalent in the year immediately preceding admission.
Value: $250–$1,500 annually as may be determined by the financial need of the applicant.
Apply: On non-Ontario scholarship application forms available from the Office of Student Awards.

Bobby Bauer Memorial Awards

The Bobby Bauer Memorial Foundation offers one or more awards annually to students who demonstrate outstanding proficiency in hockey and who qualify for admission to a full-time undergraduate course at any Canadian university.
Value: Variable.
Apply: The Bobby Bauer Memorial Foundation, 60 Victoria Street North, Kitchener, Ontario.

Blenkhorn and Sawle Ltd. College Entrance Scholarship

Tenable in the Faculty of Applied Science and Engineering.
Gift of Blenkhorn and Sawle Ltd., awarded to a student from the Niagara Peninsula who enters the First Year of an Engineering course in a recognized Canadian university. Consideration is given to both academic standing and financial need, and preference is given to applicants registering in Electrical or Mechanical Engineering.
Value: The amount of the First Year tuition fee.
Apply: The High School Principal, or Blenkhorn and Sawle Ltd., Grantham Avenue, St. Catharines.

Bloor District Business Men's Scholarships

Tenable in any first degree course.
Gift of the above Organization, two Scholarships open to graduates of Bloor Collegiate Institute and Central Technical School on the basis of academic standing and financial need.
Value: Variable.
Apply: The High School Principal, or the Treasurer, Bloor District Business Men, c/o Royal Bank, Bloor and Dovercourt, Toronto.

B'nai B'rith No. 1528, Jacob Goldblatt Lodge Scholarship

Tenable in any degree course.
Two scholarships are offered to Welland County High School graduates.
Value: $100 and $60.
Apply: Principal of any Welland County high school.

Brant Pharmacists' Association Bursary

Tenable in the Faculty of Pharmacy.
Gift of the above Association to a student entering the Faculty of Pharmacy from a high school in Brantford.
Value: $200.
Apply: Further information might be obtained from high-school guidance counsellors.

Sam Bucovetsky Scholarship

Tenable in any first degree course.
Gift of the children of Mr. Bucovetsky in his memory and open to all graduates of the Timmins or South Porcupine High Schools on the basis of the prescribed Grade 13 examinations. The winner must enrol in a recognized Canadian university and must not hold any other local Scholarship at the same time.
Value: $200.
Apply: Full particulars are obtainable from the Timmins or South Porcupine high school principals.

Cabot Corporation—Godfrey L. Cabot Scholarships

Tenable in any first degree course.
Awarded to the children of full-time employees (of Cabot Carbon of Canada Ltd.) for a possible four years provided satisfactory academic standing is maintained.
Value: $100–$2,000 as may be determined by the financial need of the applicant.
Application and information from the Industrial Relations Manager.

Canadian Italian Business and Professional Men's Association of Toronto Bursaries

Tenable in any university course.
A number of admission awards annually, offered to applicants who are of Italian origin, who have maintained an average of 65% or more in the last secondary school year and who demonstrate financial need.
Value: Variable.
Apply: On forms available through the Principal from the Chairman of the Association's Bursary Committee.

Canadian National Institute for the Blind—Reader Bursary

Tenable in any degree course.
Open to deserving blind students; intended as payment for sighted readers to assist in text-book reading.
Value: $200.
Apply: Superintendent of local Institute for the Blind.

Carnation Company Limited Scholarships

Tenable in any degree course.
Open to children of dairy farmers who produce milk for the Carnation plants in the provinces of Quebec and Alberta.
Value: $500, renewable if high scholastic standing is achieved.
Apply: Carnation Company Limited Scholarship Program, 4174 Dundas Street West, Toronto 18, Ontario.

Cominco Diamond Jubilee Higher Education Awards

Tenable in any degree course.
Cominco Ltd. offer Higher Education Awards to children of its employees on the basis of standing obtained in a full high school leaving course.
Value: Class I awards valued at $500; Class II awards valued at $350.
Apply: Secretary, Education Awards Committee, Cominco Ltd., Trail, B.C., prior to September 1.

Carle C. Conway Scholarships—Continental Can Company of Canada Limited

Tenable in any first degree course.
Open to sons and daughters of employees active or retired of Continental

Can Company of Canada Limited on the basis of academic standing and financial need.
Renewable for a possible four years provided satisfactory academic standing is maintained.
Value: $750, with an additional $150 grant-in-aid to the University selected by the winner.
Apply: The Manager of Industrial Relations, Continental Can Co. of Canada Ltd., P.O. Box 4021, Terminal A, Toronto.

County of Brant—World War Memorial Scholarships

Tenable in any degree course.
Scholarships are open to students resident in the County of Brant who are former members of the armed forces, or their dependents.
Value: $200 annually for the duration of the scholar's course provided satisfactory academic standing is maintained. Only four scholarships may run concurrently.
Apply: By July 1 at the High School on forms available through the Principal.

Coutts Hallmark Foundation Scholarships

Tenable in any degree course.
Open to relatives and friends of employees of the William E. Coutts Company Limited. Consideration will be given to character, scholastic record, financial need and results of the scholastic aptitude test given by the College Entrance Examination Board. Applicants must be nominated by a Company employee. A special committee is responsible for selecting candidates and assessing the amount of each award. Several given each year.
Value: Variable.
Apply: Coutts Hallmark Foundation, 200 King Street East, Toronto 2, Ontario.

Crouse-Hinds Company of Canada Limited Scholarship

Tenable in any first degree course.
Open to children and wards of employees of Crouse-Hinds Company of Canada Limited on the basis of academic record, scholastic aptitude, character and school citizenship. Renewable for a possible four years, provided that the holder's performance and general conduct remain satisfactory.
Value: A maximum of $550 per year toward tuition.
Apply: By June 1, to the Personnel Manager, Crouse-Hinds Company of Canada Limited, 1160 Birchmount Road, Scarborough, Ontario.

The Roy H. Davis Scholarship

Tenable as follows: Metallurgical, Chemical, Mechanical, Electrical and Industrial Engineering, and Engineering Physics. Honours Courses—Science, Mathematics, Psychology and Economics. Business Administration and Commerce and Finance.
Atlas Steels Ltd., offers scholarships to its employees and employees' sons and daughters on basis of scholarship, character and need.
Value: Maximum of $1,000 per annum renewable each year.
Apply: R. H. Davis Scholarship Committee, Atlas Steels Ltd., Welland, Ontario, prior to August 15.

The J. J. Doran Scholarship

Tenable in any first degree course.
Awarded annually by Doran's Northern Ontario Breweries Ltd. to the male student graduating from any of the Timmins or Tisdale Township High Schools, who ranks highest in Grade 13. The winner must enrol in a recog-

nized Canadian University and must not hold any other local scholarship at the same time.
Value: $200.
No application necessary.

Dryden Paper Company Ltd. and Pulp and Papermill Unions Annual Bursary

Tenable in any university course.
Bursaries are available to students of the Dryden H.S. Awarded on scholarship, need and participation in school activities.
Value: $450.
Apply: Principal, Dryden H.S.

Sir James Dunn Scholarships—Algoma Steel Corporation Limited

Tenable in the Faculty of Arts and Science and the Faculty of Applied Science and Engineering.
Open to students graduating from High Schools in Sault Ste. Marie and vicinity, and entering the First Year of an acceptable degree course at University. Awarded for one year initially, the Scholarships may be renewed for an additional three years.
Value: Tuition fees and allowances up to a maximum of $1,450 annually.
Apply: The High School Principal, or the Corporation, Sault Ste. Marie, Ontario.

Eddy Forest Products Limited University Scholarships

Tenable in any degree course.
Awarded to a student of the Espanola High School, who obtains a minimum average of 75% in Grade 13.
Value: $500 for a possible four years and subject to maintenance of satisfactory academic standing.
Apply: Scholarship Committee, c/o Espanola High School, Espanola, Ontario, by December 1 of the last school year.

Essex County Pharmacists' Association Bursary

Tenable in the Faculty of Pharmacy.
The above-named Association offers a bursary annually to a student entering the Faculty of Pharmacy from a secondary school in Essex County.
Value: $350.
Apply: The Secretary of the Essex County Pharmacists' Association.

The Ole Evinrude Foundation (Canada) Inc. Scholarship

Tenable in the Faculty of Arts and Science and the Faculty of Applied Science and Engineering.
Awarded to students of the secondary schools of the City of Peterborough.
Renewable on First Class Honours or Grade A standing.
Value: $1,000 and $750 per annum.
Apply: The Ole Evinrude Foundation (Canada) Inc., Peterborough, Ontario, by May 1.

Farthing Memorial Scholarship

Tenable in any course.
Awarded to the boy and girl student registering at university, with the highest standing in Grade 13 at East Elgin Secondary School.
Value: Two of approximately $1,440 each.
Apply: In writing to the principal of East Elgin Secondary School.

Daniel Fiedler Memorial Award

Tenable in the Faculty of Pharmacy.

The St. Catharines Pharmacists' Association offers bursaries to students of or entering the Faculty of Pharmacy from a secondary school in the St. Catharines area. Awarded on the basis of scholastic ability and financial need.

Value: $200.

Apply: Mr. C. R. Luders, 8 Spring Garden Blvd., St. Catharines, Ontario.

Ford Motor Company of Canada Limited Scholarships

Tenable in any degree course.

Students who are children of employees of Ford Motor Company of Canada, Limited, may be eligible to receive awards tenable for a possible four years of a full-time undergraduate course. This Plan is administered entirely by the Company, from which all further information is available.

Value: Tuition fees and a contribution toward living expenses.

Apply: Ford Scholarship Administrator, Ford Motor Company of Canada, Limited, The Canadian Road, Oakville, Ontario.

Gilbey Centennial Scholarship

Tenable in any degree course.

Open to the child or grandchild of any employee or pensioner of Gilbey Canada Ltd. who has achieved at least First Class Honours in Grade 13.

Value: $1,000 a year for four years if satisfactory standing is maintained.

Apply: The Secretary-Treasurer, Gilbey Canada Limited, 120 18th Street, Toronto 14, Ontario, by April 25.

Great Lakes Paper Co. Scholarship

Tenable in any degree course.

Great Lakes Paper Co. offers scholarships to children of employees having an average of Second Class honours in Grade 13, with consideration also given to personal qualities and activities.

Value: $1,000 over three years.

Apply: The Great Lakes Paper Co. Ltd., Thunder Bay, Ontario.

Great Northern Railway Co. Scholarship

Tenable in any degree course.

Great Northern Railway Co. offers scholarships to sons and daughters of employees in top third of high school graduating class.

Value: $1,000 per year for four years with summer employment with company.

Apply: Personnel Department, Great Northern Railway Co., St. Paul, Minnesota.

Hamilton Home Economics Association Bursary

A bursary shall be awarded each year to the Faculty of Food Sciences for a worthy first year student from Hamilton or district as chosen by the Dean or her committee.

Value: $100.

Apply: Secretary, Hamilton Home Economics Association by May 1.

Hamilton Ladies' Auxiliary Bursary

Tenable in the Faculty of Pharmacy.

The Ladies' Auxiliary to the Hamilton Pharmacists' Association offers either one or two bursaries to candidates for admission to the Faculty of Pharmacy

from a secondary school in the Hamilton area, on the basis of character, leadership, financial need, and academic standing.
Value: One bursary of $400, or two bursaries of $200 each.
Apply: The President of the Hamilton Ladies' Auxiliary.

Hamilton Optimist Club Scholarships

Tenable in any degree course.
Awarded to members of the Young Men's Optimist Club of Hamilton on basis of need.
Value: $200.
Apply: Hamilton Optimist Club.

Imperial Leaf Tobacco Scholarship

Tenable in any first degree course.
Open to students matriculating from East Elgin Secondary School and registering in a Canadian university. Award shall be made to the student attaining high standing in Grade 13 (minimum average required is 70%) and not receiving another scholarship intended to help meet university expenses. The award may be renewed for a second year, provided academic standing remains satisfactory.
Value: $1,000 ($600 during the first year; $400 during the second year).
Apply: In writing to the Principal of East Elgin Secondary School.

Imperial Oil Higher Education Awards

Tenable in any first degree course.
Imperial Oil Limited offers awards on a national basis to the children and wards of its employees and annuitants, who have obtained an overall average of at least 70% in the examinations on which admission to the chosen course is based. Administered and awarded by the Company from whom further details may be obtained.
Value: The tuition and other compulsory fees for a maximum of four years provided the student successfully completes each academic year.
Apply: The Secretary of the Committee on Higher Education, Imperial Oil Limited, 111 St. Clair Avenue West, Toronto 7, by February 1.

INCO "Internal" Scholarships

Tenable in any first degree course.
The International Nickel Company of Canada, Limited offers scholarships to the children and wards of its employees. Awards are renewable up to a period of four years, provided that satisfactory standing is maintained.
Value: $300, plus tuition annually.
Apply: International Nickel Company of Canada Ltd., P.O. Box 44, Toronto Dominion Centre, Toronto 111, Ontario.

London Pharmacists' Association Scholarship

Tenable in the Faculty of Pharmacy.
Gift of the above-named Association, awarded to a student entering the Faculty of Pharmacy from a secondary school in the London area.
Value: $250.
Apply: The Secretary of the London Pharmacists' Association.

Niagara Falls Pharmacists' Association Bursaries

Tenable in the Faculty of Pharmacy.
Awarded to a Grade 13 student who is entering Pharmacy from one of the Niagara Falls Secondary Schools.
Value: $100.
Apply: The Principal of the Secondary School.

Northern Electric Scholarship

Tenable in the Faculty of Applied Science and Engineering. Offered to a Secondary School student in Hastings County who registers in Engineering at a recognized University, and who obtained the highest standing in Grade 13.
Value: $100
Apply: Guidance Department of attending school.

Ontario Paper Co. Ltd. Scholarships

Tenable in any degree course.
Open to children of employees of the Company and students of Thorold and District Secondary School.
Value: $3,000 over four years. (Two Scholarships awarded annually.)
Apply: The Secretary, Scholarship Committee, Ontario Paper Co., Thorold, Ontario by June 1st.

Polymer Corporation Ltd. Scholarships

Tenable in any degree course.
Awarded to children of Polymer employees and residents of Lambton County for a possible four years provided satisfactory progress is maintained. Not tenable with any other cash awards.
Value: $1,500 annually.
Apply: Secretary, Scholarship Committee, Polymer Corporation Ltd., Sarnia, Ontario.

Polymer Corporation Ltd. Higher Education Awards

Tenable in any degree or diploma course of at least two years' duration.
Awarded to children of Polymer employees for a possible four years provided satisfactory progress is maintained. Other awards may be held.
Value: Tuition and compulsory fees.
Apply: Secretary, Scholarship Committee, Polymer Corporation Ltd., Sarnia, Ontario.

Porcupine Fish and Game Protective Association Scholarship

Tenable in the Faculty of Forestry.
Gift of the above Association, awarded to a student entering the Faculty of Forestry. Open to Secondary School graduates of the Porcupine area only. Administered entirely by the Association, where further information as to other conditions may be obtained.
Value: $300 over three years.
Apply: Porcupine Fish and Game Protective Association, Box 822, Schumacher, Ontario.

Quinte District Pharmacists' Association Bursary

Tenable in the Faculty of Pharmacy.
Gift of the above-named Association, awarded to a student entering the Faculty of Pharmacy from a secondary school in the Quinte District.
Value: $200.
Apply: The Secretary of the Quinte District Pharmacists' Association.

Redpath Sugar Scholarship

Tenable in any first degree course.
Open to sons and daughters of employees of Canada and Dominion Sugar Company Limited and awarded on the basis of scholarship and achievement, personality and potential leadership qualities. The Scholarship Committee in Montreal will be responsible for selecting candidates, and assessing the

amount of each award. The Scholarship is tenable for a maximum of five years, provided academic progress remains satisfactory.
Value: One or two scholarships annually, to a total value of $1,200. Individual awards are determined by financial need and the costs involved.
Apply: By July 1, to Canada and Dominion Sugar Co. Ltd., P.O. Box 490, Montreal 101, Quebec.

Rubbermaid (Canada) Limited—The James R. Caldwell Scholarship

Tenable in any first degree course.
Awarded to the children of employees for a possible four years provided they maintain satisfactory progress.
Value: $500 annually.
Apply: The President, Rubbermaid (Canada) Ltd., 2531 Stanfield Road, Cooksville, Ontario.

St. Lawrence Cement Co. Scholarship

Tenable in any course.
Three scholarships are open to sons and daughters of Company employees who have two years continuous service with the company and are awarded on the basis of scholastic record, Principal's recommendation, and personal interview. Provided the Scholarship winner obtains a minimum of Grade B standing, his award may be renewed yearly until the completion of his studies.
Value: $500 each scholarship.
Apply: Before June 30 to The St. Lawrence Cement Company, P.O. Box 520, Clarkson, Ontario.

Scarborough General Hospital Medical Society Award

Tenable in the Faculty of Arts and Science, Faculty of Applied Science and Engineering, Faculty of Medicine, and Faculty of Dentistry.
Gift of the above Society, awarded to an outstanding graduate of a secondary school in the Scarborough area who enrols in a course in pure or applied science in an Ontario University. The bases of award shall be academic record, qualities of character and leadership, and financial need.
Value: $200.
Apply: The High School, by June 15.

W. J. Scott Fire Prevention Memorial Bursary

Tenable in any course.
Given by many friends and associates under the auspices of the Canadian Association of Fire Chiefs, to honour the memory of the late William J. Scott, C.B.E., Q.C., Fire Marshal of Ontario from 1935 until his death in 1960. Preference will be given to the child of a past or present member of a public fire service and to candidates from a different province each year. The award will go to a Manitoba student in 1970–71.
Value: $500.
Apply: Joint Fire Prevention Publicity Committee Inc., 34 Front Street West, Toronto 1.

Simpsons-Sears Limited (Northern Ontario) Scholarships

Tenable in any first degree course.
Gift of Simpsons-Sears Limited, these scholarships are open only to students of the Copper Cliff High School, the public Secondary Schools of Sudbury, the Sturgeon Falls High School, the public Secondary Schools of North Bay,

the Kapuskasing High School, the Thunder Bay Secondary Schools, and all the secondary schools along the Ontario Northland Railway. Awarded on the basis of standing obtained in seven Grade 13 credits. The winners must register as full-time students and maintain a uniformly high standard.
Value: $100 scholarship in each school, with an additional $50 to the candidate ranking highest.
Apply: The Principal, Algonquin Composite School, North Bay, Ontario, by May 15.

Steel Company of Canada Ltd. University Entrance Scholarships

Tenable in any four-year course.
Open to students attending secondary schools in the Hamilton and Welland Districts who obtained a First Class Honour standing in the graduating year.
Value: $500.
Apply: The Principal of the Secondary School.

Steep Rock Iron Mines Ltd. Scholarships

Tenable in (a) the Faculty of Applied Science and Engineering (b) any University course.
Open to students from the Atikokan High School.
Value: $500, $350, $250.
Apply: Principal, Atikokan High School.

Steinberg Employee Scholarship Plan

Tenable in any first degree course.
The Steinberg Company offers scholarships to the children of employees, on the basis of academic achievement, personal aptitude and potential, participation in extra-curricular activities and other characteristics.
Value: $200 or $400 cash plus tuition and incidental fees, renewable provided satisfactory academic and personal standards are maintained.
Apply: Steinberg's Limited, Employment Office, c/o Employment Manager, 110 Cremazie Blvd. West, Montreal 11, P.Q.

Tillie Sussman Memorial Bursary

Tenable in any course.
Open to students in Arthur District H.S. on basis of need.
Value: $100.
Apply: Principal, Arthur District H.S.

Thorburn Bursary

Tenable in the Faculty of Pharmacy.
Awarded by Thorburn Drug Stores Limited to a top-ranking student entering the Faculty of Pharmacy from Niagara Falls Collegiate or Stamford Collegiate.
Value: $100.
Apply: To the Principal.

Toronto Garrison of Artillery Ladies' Auxiliary Scholarship

Tenable in any degree course.
Open to children or wards of officers or men now serving, or who have served in the Royal Canadian Artillery, on the basis of standing in Grade 13, character, and financial need. Applicants must be Ontario residents.
Value: $200.
Apply: The Secretary of the Auxiliary, 55 Owen Blvd., Willowdale, Ontario.

United States Fidelity and Guaranty Company (Fidelity Insurance Company of Canada) Scholarships

Tenable in any first degree course.

Awarded to the children of employees for a possible four years provided satisfactory standing is maintained.

Value: $500–$1,500 as may be determined by the financial need of the applicant.

Application forms from the Personnel Department, U.S.F. and G. Company, P.O. Box 1138, Baltimore, Maryland 21203.

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UNIVERSITY OF TORONTO

Undergraduate Admission Handbook 1971-72

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University of Toronto Admissions 1971

A radical change in entrance requirements becomes effective in 1971. Below is reproduced the announcement made to the schools.

NEW DEVELOPMENTS

The University of Toronto's entrance requirements, effective in 1971, are outlined on the pages following. Recently there have been significant curriculum developments in some secondary schools (individual timetabling, the credit system, etc.) and in consequence the University of Toronto has arranged for more flexible subject requirements. It should be emphasized, however, that students in schools which are organized on the more structured, traditional pattern may, if they wish, continue to plan their Grade 13 programmes as at present. In either case it is left to the school to determine what constitutes an appropriate Grade 13 programme.

For 1971 the University of Toronto is not publishing a list of acceptable subjects, but does give advice about subjects considered of major importance.

The new provisions make no reference to credits. Many schools are planning to operate in future on the subject basis only and in these schools five subjects will normally make up a full Grade 13 programme. The new requirements take account of this, but in the case of schools remaining on the old system of single and double credits, the University of Toronto will give double credits for subjects assigned double credit by the school, and four subjects will be perfectly acceptable.

BASIS OF ADMISSION

Entrance to the First Year of the undergraduate courses is offered, depending upon the number of places available, to candidates from Ontario secondary schools who demonstrate good standing, based upon the following evidence:

1 Completion of secondary school studies, including a full year of academic work at the grade 13 level.
2 A recommendation by the secondary school last attended regarding fitness for university studies.
3 A complete academic report for the three final years of secondary school.
4 Results of standardized tests offered by the Service for Admission to College and University.

RECOMMENDED PRINCIPLES OF SUBJECT SELECTION

1 Throughout the secondary school years students should study in as many of the following areas as possible: English, French and other languages, mathematics, sciences, social studies. Students should also consider carefully what aspects of their projected university work will entail prerequisite studies.
2 A full grade 13 programme should normally include work in *at least five different subjects*. If a school considers a subject to have relatively greater or less weight than the other subjects in the school's programme, then the total number of subjects may be somewhat adjusted.
3 Subjects newly introduced into the grade 13 curriculum will be recognized by the University, which continues, however, to place a high value on previously recognized subjects involving study over a period of years and such subjects should normally

constitute the major part of a grade 13 programme presented for admission.

Candidates are advised to include in their grade 13 programme *at least two of: English, French or another language, mathematics, science.*

Each faculty regards certain grade 13 subjects as necessary preparation and these are listed in Sections 4 and 5.

NOTES FOR PRINCIPALS, GUIDANCE HEADS AND STUDENTS

1 No minimum mark or percentage is prescribed for admission to the University, but because of the pressure of applications and the nature of the university courses it is likely that a student will require a school average above 60% in order to be considered for selection.

2 The University is no longer making a distinction between one-credit and two-credit subjects, but would expect when a student has studied approximately twice as much material in some subjects as in other subjects two marks would be given for these subjects. These marks could be identical or different according to school practice. It is assumed that all results reported for English and language subjects will include literature as well as composition.

3 The University of Toronto does not specify the minimum number of years to be spent in secondary school. If a school's organization permits certain students to complete their studies to the end of grade 13 in fewer than five years, applications will be welcomed from those students. The University does not accept applications from students at the end of their grade 12 work.

4 If a student takes more than five years to complete

his studies to the end of grade 13, the University expects correspondingly higher standing; extenuating circumstances are considered if reported by the school.

5 Applications are considered from students whose credentials do not comply with the entrance requirements of the University, but, as fully qualified applicants outnumber the entrance places annually available, such students are expected to offer evidence of exceptional attainments to compensate for entrance deficiencies.

Candidates from educational jurisdictions outside Ontario should refer to Section 8 and should present a subject pattern which generally conforms with this announcement and in addition specifically prepares them for their own universities. They may improve their competitive position by taking the aptitude and applicable achievement tests offered by the Service for Admission to College and University or the aptitude test offered by the College Entrance Examination Board. For information they should write to the Service for Admission to College and University, 151 Slater St., Ottawa, Canada, or to the College Entrance Examination Board, Box 592, Princeton, New Jersey, 08540, USA.

2 Application Procedures

Candidates currently in Ontario Grade 13 should apply through their high school using the General Application Form. Applications received from such candidates by April 1st will be given early consideration.

Candidates from other provinces should write to t

Office of Admissions for a questionnaire which they will be invited to fill out for preliminary consideration.

SUMMARY OF TERMINAL DATES

Applications for admission to undergraduate degree and diploma courses should be submitted as early as possible in the year for which the applicant seeks admission, and not later than the dates below.

1 April	1971	Applications to be considered for Early Admission.
1 April	1971	Applications for Extension – Summer Session – Evening.
15 May	1971	Applications for Extension – Summer Session – Daytime.
1 June	1971	Applications for regular full-time courses.
1 August	1971	Applications for Extension – Winter Session.

Mature Students

Students twenty-four years of age or over, residents of Ontario for at least one year, who have a sound academic record, will be considered for admission to the Faculty of Arts and Science as mature students upon completion with high standing of one of the Pre-University Courses offered by the Division of University Extension (or an equivalent course). Persons wishing to apply as mature candidates should consult the Office of Admissions about their eligibility before undertaking one of the Pre-University Courses described in Section 6 since successful completion of a Pre-University Course does not in itself ensure selection.

Courses with scientific content such as those offered by Professional Faculties often have additional requirements. This information may also be obtained from the Office of Admissions.

4 Faculty of Arts and Science

ARTS AND SCIENCE PROGRAMME

3 years or 4 years – $537*

Degrees are offered in Arts, Science and Commerce. In either three or four year programmes students may specialize or take a variety of subjects.
Candidates should satisfy the general requirements for admission outlined in Section 1 and are reminded that certain specific university courses in mathematics, science and languages have Grade 13 prerequisites.
The Arts and Science programme enables a student to determine his own programme each year by choosing those courses which will interest him and for which he has the required background, if any. A student entering First Year will choose five courses from the offerings of the following departments:
Anthropology, Astronomy, Botany, Chemistry, Classical Studies, East Asian Studies, English, Fine Art, French, Geography, Geology, German, History

*Fees vary somewhat from college to college and for men and women. The amount shown above is for a male student at University College; the same student enrolled in one of the federated colleges would pay a slightly higher amount.

Islamic Studies, Italian and Hispanic Studies, Latin American Studies, Linguistics, Mathematics, Music, Near Eastern Studies, Philosophy, Physics, Political Economy, Psychology, Religious Studies, Slavic Languages and Literatures, Sociology, Zoology. Applicants for the Faculty of Arts and Science will enrol in one of the colleges of the University. These are described on pages 29 to 33. University College, New College, Innis College, Scarborough College and Erindale College are constituent parts of the University of Toronto. Victoria College, Trinity College and St. Michael's College are parts of the federated universities which, in conjunction with the University of Toronto, offer programmes in Arts, Science and Commerce, and their students are granted University of Toronto degrees.

Professional Faculties and Schools

Under the name of the division, there appears a list of the programmes offered and the degrees and diplomas to which they lead, the approximate fee (fees quoted are for the 1970–71 session), the duration of the course, and the specific Grade 13 subjects required as preparation. Candidates should also be familiar with the general admission requirements outlined in Section 1.

Faculty of Applied Science and Engineering

BACHELOR OF APPLIED SCIENCE (B.A.SC.)
4 years – $717

Civil Engineering
Mechanical Engineering
Industrial Engineering
Chemical Engineering
Electrical Engineering
Metallurgy & Material Science
Geological Engineering
Engineering Science*

*In Third Year Engineering Science a student elects one of the following options:
Aerospace, Chemical, Computer Science, Geophysics, Materials Science, Nuclear and Thermal Power, Physics, Special (arranged with staff).

Candidates must have completed a full year of study at the Grade 13 level including the following subjects: mathematics A and B, physics and chemistry.
Students lacking one of mathematics B, physics, or chemistry will also be considered.
Candidates for the course in Engineering Science should have excellent standing.

Faculty of Architecture, Urban and Regional Planning and Landscape Architecture

BACHELOR OF ARCHITECTURE (B.ARCH.)
5 years – $717
Mathematics A and English are required.
Applicants within a radius of 500 miles of Toronto

invited for an interview and all applicants are asked to present a portfolio of their work.

BACHELOR OF LANDSCAPE ARCHITECTURE (B.L.ARCH.) / 4 years – $717
Mathematics A and English are required.

Faculty of Dentistry

Degree Course – See below, Section 7
Diploma Course in Dental Hygiene / 2 years – $467 (Women's fee)
Chemistry and biology are required.

Faculty of Food Sciences

BACHELOR OF SCIENCE (Food Sciences), B.SC. (Food Sciences) / 4 years – $509 (Women), $534 (Men)
Mathematics A and chemistry are required.
NOTE: In Second Year Food Sciences, a student elects one of three branches: Nutrition, Textiles, or Food Chemistry.

Faculty of Forestry

BACHELOR OF SCIENCE IN FORESTRY (B.SC.F.) / 4 years – $669
Mathematics A and chemistry are required.
NOTE: In Third Year Forestry a student may elect the branch of Wood Science.

Faculty of Medicine

See page 18 for requirements for entry into the Professional Course.

Diploma Course in Physical and Occupational Therapy / 3 years – $528 (Women's fee)
Chemistry is required.
Candidates must be physically capable of taking the course.

Faculty of Music

BACHELOR OF MUSIC DEGREE COURSE (MUS.BAC.) / 4 years – $552

In Second Year Music, a student chooses as his major field of concentration one of: Composition, History and Literature, Instrumental Music Education, Vocal Music Education. If he so desires a student may also choose one of these fields as a minor.

Candidates for the Bachelor of Music Degree Course (Mus. Bac.) must present:

Academic Requirements. See Section 1

Music Requirements

Candidates must satisfy either i or ii.

i An entrance examination, given in Toronto by the Faculty of Music *or*

ii One of the following complete sets of R.C.M.T. (or equivalent) certificates:

a) Grade X Piano, Grade II Theory, and Grade III Harmony.

b) Grade VIII in any standard orchestra instrument (excluding piano), any band instrument, organ or voice plus Grade II Theory and Grade III Harmony.

Students who do not have Grade VI piano or organ must obtain this before entering the second year of the course.

BACHELOR OF MUSIC DEGREE COURSE IN PERFORMANCE (MUS.BAC.) / 4 years – $552

Academic Requirements

The completion of Grade 12 with subjects as suggested in Section 1.

Professional Requirements

An entrance audition in performance is required of all applicants. Only those showing special talent and accomplishment will be admitted to the course.

School of Nursing

BACHELOR OF SCIENCE IN NURSING (B.SC.N.)

Basic Degree Course in Nursing / 4 years – $465

Degree Course for Graduates of Diploma Schools of Nursing / 3 years – $510

All candidates for the basic degree course must present chemistry. Graduate nurses who left high school in 1966 or previously do not require chemistry.

NOTE: Mature applicants to the Degree Course for Graduates of Diploma Schools of Nursing are required to present high standing in at least two Pre-University Courses (or their equivalent) one of which must be chemistry and obtain standing in such other tests as may be required.

Faculty of Pharmacy

BACHELOR OF SCIENCE IN PHARMACY (B.SC.PHM.) / 4 years – $560

Mathematics A and chemistry are required.

School of Physical and Health Education

BACHELOR OF PHYSICAL AND HEALTH EDUCATION (B.P.H.E.) /
4 years – $559 (Men), $536 (Women)
Mathematics A, and physics or chemistry are required. Candidates with standing in two of mathematics A, physics, chemistry, biology, will also be considered. In addition, through the required personal interview, a candidate's assets will be evaluated in reference to activity background, general health and ability to participate successfully in the activity laboratories and skill learning opportunities, and leadership experiences related to the purpose of the School.

6 Division of University Extension

DEGREE PROGRAMMES
To enable students to study for degrees on a part-time basis, courses are available in the four programmes mentioned below. The general admission requirements are the same as those outlined in Section 1, although candidates should note that the three professional courses all have additional requirements.
The regulations governing the entry of mature students to the University may be found in Section 3.

Arts and Science Programme – $95.00 per subject
Candidates should satisfy the general admission

requirements outlined on pages 1 to 3, and are reminded that certain specific university courses in mathematics, science and languages have Grade 13 prerequisites.
Offered in the Winter Session and the Summer Day and Evening Sessions.

Two Years of the Degree Course for Graduates of Diploma Schools of Nursing (B.SC.N.) – $95.00 per subject
All candidates must present chemistry except those who left high school in 1966 or previously.

First Year Programme leading towards a Bachelor of Applied Science Degree (B.A.SC.) – $95.00 per subject
Mathematics A and B, physics and chemistry are required. Students lacking one of mathematics B, physics, or chemistry will also be considered.

First Year Programme leading towards a Bachelor of Physical and Health Education Degree (B.P.H.E.) – $95.00 per subject
Candidates should present mathematics A, and physics or chemistry. Candidates with standing in two of mathematics A, physics, chemistry, biology, will also be considered. Offered in the Winter Session and the Summer Day Session only.

DIPLOMA AND CERTIFICATE PROGRAMMES

Diploma Course in Translation
For students who wish to become translators in English and French. Applicants must have a B.A. degree from a North American university or have equivalent academic qualifications. The course extends over three years with courses offered in the

Winter Session only. For detailed information contact the Division of University Extension.

Evening Programme in Business

A three-year evening programme leading to a certificate. The programme includes accounting, economics, business organization, finance, statistics, marketing, production, personnel, data processing. Admission requirements are those for normal university entrance (See Section 1).

Evening Programme in Public Administration

A three-year programme leading to a certificate. It includes Political Science, Social Factors of Administration, Economics, Public Administration, Intergovernmental Relations and Local Government, Modern Social and Political Ideas, Economic Development of Canada, Urban Geography. Admission requirements are those for normal university entrance (See Section 1).

Certificate Course in Criminology

This course is intended for those interested in or practising in fields concerned with the prevention of crime in our society. The certificate would be awarded on completion of six courses, of which not more than two may be undertaken in any academic year. Admission requirements are those for normal university entrance (See Section 1).

PRE-UNIVERSITY COURSES

These courses are designed to assist persons who wish to be considered for admission to the University of Toronto as "mature students" (see Section 3) or who desire preparation for more advanced courses. They are similar to Grade 13 courses but require the type of performance which will be expected of applicants in

the first year of university study. Courses are offered in English, history, mathematics, physics, and chemistry. The fee is approximately $100.00 per course. A brochure giving additional information is available upon request from the Division of University Extension.

OTHER PROGRAMMES

Oral French Summer School, Saint Pierre

This school is held annually during the months of July and August on the Islands of St. Pierre et Miquelon. Beginners, Intermediate and Advanced Courses are provided for students wishing to develop proficiency in Oral French.

Course for the Preparation of Teachers in Pre-School Education

In co-operation with the Association for Early Childhood Education of Ontario, a course for teachers in pre-school education is offered.

Business and Professional Courses

These are designed to meet the educational needs of supervisory, executive and professional personnel. In most cases there are no academic requirements for enrolment. Optional examinations are offered in some subjects. Several subjects are available through correspondence study.

Other Divisions

Application for the following courses is made to the divisions concerned

School of Business

The School of Business accepts university graduates to a one-year course leading to a Diploma in Business

Administration. A two-year course leading to the degree of Master of Business Administration is also offered, through the School of Graduate Studies. Information is available from the Academic Secretary School of Business.

Institute of Child Study

The Institute of Child Study accepts university graduates to a two-year course leading to a Diploma in Child Study. Students may concentrate in Infancy, Early Childhood, Appraisal and Guidance, Child Research or Family Life. Undergraduate students interested in carrying out honours research theses are welcomed. Inquiries should be made to the Secretary of the Institute of Child Study, 45 Walmer Road, Toronto 179.

Faculty of Dentistry

DOCTOR OF DENTAL SURGERY (D.D.S.) /
4 years – $712

Inquiries should be addressed and applications submitted to the Secretary, Faculty of Dentistry, 124 Edward Street, Toronto 101, Ontario. Applications must be in the hands of the Secretary no later than March 1st; late applications will not be considered. Candidates for admission to the First Year must have completed successfully a minimum of one academic year in an acceptable programme at a level beyond Ontario Grade 13 (or equivalent). This preparatory year must include courses in Physics, Chemistry, and Zoology (or Biology, if Zoology is not offered at the university attended). Those who wish to carry out

their preparatory programme at the University of Toronto should enrol in the Faculty of Arts and Science, and (at the St. George campus) should include the following subjects at the levels shown or higher: Biology 100 or 120, Chemistry 120, Physics 140 or 130 or 120. Course numbers for Scarborough and Erindale colleges, and for other Ontario universities, are available from the Faculty Secretary.
Admission requirements for the Faculty of Arts and Science are given in Section 4.
Candidates whose post-secondary education has been taken outside Canada should consult with the Faculty Secretary.
All candidates for admission to the First Year must take the Dental Aptitude Tests conducted by the Canadian Dental Association or the American Dental Association.

Faculty of Forestry

The Faculty of Forestry and the Department of Zoology jointly sponsor a one-year post-baccalaureate Diploma Course in Resource Management for graduates in Agriculture, Biology, Forestry, Geography and related sciences. Enquiries should be addressed to the Secretary, Faculty of Forestry.

School of Hygiene

The School of Hygiene accepts suitably qualified university graduates to one-year graduate diploma programmes in: Public Health, Microbiology, Veterinary Public Health, Industrial Health, Nutrition, or to a

two-year graduate diploma programme in Hospital Administration. Applications should be made to the Secretary of the School of Hygiene.

Faculty of Law

BACHELOR OF LAW (LL.B.) / 3 years – $562
Admission Requirements. B.A. degree or equivalent; or 2 years' university work following Ontario Grade 13 or equivalent. All applicants must take the Law School Admission Test.
Information should be sought from and applications submitted to the Secretary, Faculty of Law, Universi of Toronto.

School of Library Science

The School of Library Science accepts suitably qualified university graduates for a two-year course leading to the degree of Master of Library Science. This course is administered under the regulations o the School of Graduate Studies. Enquiries should be made to the Secretary of the School of Graduate Studies.

Faculty of Medicine

BACHELOR OF SCIENCE IN ART AS APPLIED TO MEDICINE B.SC.(A.A.M.) / 3 years – $527
Address enquiries to the Director, Department of A as Applied to Medicine, University of Toronto, 256 McCaul St., Toronto 130.

Faculty of Medicine (Limited Enrolment)

DOCTOR OF MEDICINE (M.D.) / 4 years – $772

Admission Requirements

In the Faculty of Arts and Science, University of Toronto, a minimum of two years including requisite subjects*

In another Faculty of the University of Toronto after two years, in exceptional circumstances, if applicant has requisite subjects or equivalent*

In any recognized university after obtaining a Bachelor's Degree which must include one year or its equivalent of physics, general chemistry, organic chemistry and zoology or biology, all with appropriate laboratories.

For admission with advanced standing to the Second Year (Period II) of the Professional Course in Medicine, consult the Associate Dean, Student Affairs, Faculty of Medicine.

All applicants to the Professional Course listed under *a*), *b*), and *c*) above must write the Medical College Admission Test during the October of the year preceding the proposed year of entry into the Professional Course. Applications for this Test should be submitted not later than one month prior to the date of the Test. Information and applications for the Test may be obtained from: The Psychological Corporation, 304 East 45th Street, New York, N.Y. 10017, USA.

Biology 120 or 100
Chemistry 120
Chemistry 235
Physics 140 or 120 or 130

See Section 4 for admission requirements.

Faculty of Music

Artist and Licentiate Diploma Course / 3 years – $53
After a common First year a student in the Second ar
Third Years will continue in either the Licentiate
Diploma Course, or the Artist Diploma Course.
Artist Diploma
A practical course to train performers for profession
careers.
Licentiate Diploma
A course which combines practical training with
instruction in pedagogy to prepare students for caree
as private teachers.

School of Nursing

Certificate Course in Public Health Nursing
1 year – open to graduate nurses – $510

School of Social Work

The School of Social Work admits, through the Sch
of Graduate Studies, university graduates to a two
year course leading to the degree of Master of
Social Work.
Persons holding a Master of Social Work degree m
be admitted by the School of Social Work and the
School of Graduate Studies to a programme leadin
the Doctor of Social Work degree.
Persons holding a Master of Social Work degree n
also be admitted by the School of Social Work to
programme leading to the Diploma in Advanced
Social Work.

Theology

Courses are offered by Emmanuel College (United Church), Knox College (Presbyterian), St. Michael's College (Roman Catholic), Trinity and Wycliffe Colleges (Anglican).
Enquiries should be directed to the Head of the College concerned, c/o University of Toronto, Toronto 181, Ontario

Equivalent Certificates

The following certificates are usually accepted as equivalent to Ontario Grade 13 although individual subjects cannot always be equated. Candidates offering Senior Matriculation programmes from provinces other than Ontario must offer from their final secondary school year a full programme and satisfy the subject requirements specified for the course of their choice in Sections 4, 5 and 6. Specific details on subjects and standards required for particular courses must be requested well in advance of the application deadline.
Alberta, Manitoba, Nova Scotia, Saskatchewan – Grade 12
British Columbia, New Brunswick – Grade 13 or First Year University
Newfoundland – First Year Memorial University
Prince Edward Island – First Year course at University of Prince Edward Island.
Quebec – Senior High School Leaving Certificate; English Catholic Senior High School Leaving Certificate (5th Year High – Grade 12). Other certificates as well as C.E.G.E.P. I will be considered.

9 Residence Accommodation

NOTE: Applicants desiring residence must enquire directed below. An application for University Admission is **not** an application for residence.

UNDERGRADUATE RESIDENCE AND HOUSING ACCOMMODATION, UNIVERSITY OF TORONTO

Available Accommodation	*Address Enquiries to*
UNIVERSITY COLLEGE Men's and Women's Residences	Dean of Men or Dean Women, University College
VICTORIA COLLEGE Men's and Women's Residences	Senior Tutor (Men) o Dean of Women, Victo College
TRINITY COLLEGE Men's and Women's Residences (All out of town Trinity applicants must consult the Registrar about accommodation. Admission to the College may depend on admission to residence.)	Registrar, Trinity College

ST. MICHAEL'S COLLEGE Men's and Women's Residences	Dean of Men, St. Michael's College *or* Dean, St. Joseph's College (Women), 90 Wellesley Street West, Toronto 181 *or* Dean, Loretto College (Women) 70 St. Mary Street, Toronto 181
NEW COLLEGE Men's and Women's Residences	Dean of Men or Dean of Women, New College
INNIS COLLEGE Innis College has limited space available in one on-campus residence and a number of off-campus co-operative houses. Members of Innis College may also apply to New College, men to Devonshire House and women to the University College residence.	Residence Co-ordinator, Innis College
SCARBOROUGH COLLEGE	Student Services Office, Scarborough College, 1265 Military Trail, West Hill
ERINDALE COLLEGE	Assistant Registrar Erindale College, University of Toronto

Each College has limited space available in student co-operative houses adjacent to each campus. Studer will also be assisted to find private accommodation i the area of each College.
Some accommodation may be available for women these divisions at the University College women's residence.

OTHER DIVISIONS *(Men)* Devonshire House, a Hall of Residence for men, is open to students in all Divisions, including, to a limited extent, Arts and Science and Graduate Studies. Early application is advisable.	The Secretary, Devonshire House, University of Toronto
Limited numbers of undergraduate and graduate students in faculties other than Arts & Science are also admitted to St. Michael's (men's) residence, Victoria (men's) residence and to Trinity (men's) residence. Men of any faculty applying for membership in New or Innis Colleges will be considered for residence.	Dean of Men, St. Michael's College *or* Dean of Men, Victoria College *or* Registrar, Trinity Col *or* Dean of Men, New College *or* Residence Co-ordina Innis College

OTHER DIVISIONS *(Women)* Women of any faculty applying for membership in New College will be considered for residence. University College and Loretto College may accept a few women registered in professional studies.	Dean of Women, New College *or* Dean of Women, University College *or* Dean, Loretto College

Cost of Residence

In 1969–70 the local cost of residence including meals varied from about $900 to $1,100, partially depending upon the length of the faculty term.

Married Student Apartments

Units of one and two bedroom, unfurnished apartments are available in the Married Student Apartments on Charles Street West, adjacent to the University campus. Brochures and application forms may be obtained from the University Housing Service, 49 St. George St., Toronto 181, Ontario. Telephone 928–2542.

Other Accommodation

The University Housing Service, 49 St. George St., Toronto 181, Ontario, telephone 928–2542, also maintains a registry of available accommodation for use of University students and staff. As this is in private houses over which the University has no control or authority, reservations cannot be made. Three independent residences, not having any

connection with the University, offer a variety of student accommodation. One, Campus Co-operativ Residence Incorporated offers residential and apar ment accommodation for graduate and undergradu students. Total occupancy is 300 in residence, half male, half female, and 60 in apartments. Meals are provided and non-residents are invited to eat at th Co-op Dining Rooms. Enquiries should be addresse to Campus Co-operative Residence Incorporated, 395 Huron St., Toronto 181, Ontario. Telephone 964–1961. Another is Rochdale College, a large r dence, offering single and double rooms, suites an apartments at reasonable rates. Total accommodat is about 850 students, both male and female. Addre all enquiries to Rochdale College, Reservations Off 341 Bloor St. W., Toronto 181, Ontario. Telephon 921–3168.

The third is Tartu College, a new 18-storey residence located at 310 Bloor Street West. A variety o accommodation is available for short or long-term occupancy. Enquiries should be telephoned to 925–4747.

10 Cost of Attending the University

Total first year costs vary from $2,200 – $2,600 students living in residence or in board and lodgi and from $1,200 – $1,500 for students living at h in the Toronto area. The total amount depends i part upon the fees for the chosen course. These fi include an allowance of approximately $700 for m cellaneous expenses such as books, supplies, laun cleaning, clothing and transportation. Board an

odging in a university residence costs from $900 to $1,000 but can sometimes be obtained at a lower cost n a boarding house or co-operative residence. Estimates shown are for men, covering first 8-month ession only. Comparable costs for women students vould be slightly less.

Admission Scholarships and Bursaries

ONTARIO STUDENTS

Admission scholarships and bursaries are awarded by he University, the Provincial Government and a umber of private organizations or bodies. In addi- ion, combined loan-grant assistance is available, n the basis of assessed need, to Ontario residents hrough the Ontario Student Awards Program. tudent loans are also available in exceptional cases. Details of these various award and assistance oppor- unities are contained in the Admission Awards ooklet available at secondary schools, or from the Office of Student Awards, Simcoe Hall, University f Toronto.

ON-ONTARIO STUDENTS

tudents planning to come to this country for the first me and those from provinces other than Ontario are ot eligible for financial assistance from the Province f Ontario, and only very limited aid in the form of a ew admission scholarships is available from the niversity in the first year. Non-Ontario students hould apply to the Office of Student Awards, Simcoe

Hall, University of Toronto, for particulars of these latter scholarships.

As competition is keen and funds are limited, especially at the admission level but also in the higher years, students living outside the Province of Ontari must not count on receiving assistance but are advis rather to ensure that they have sufficient funds from their own government or from private sources to cover all probable expenses.

12 School of Graduate Studies and Other Postgraduate Work

The degrees which the School of Graduate Studies the University of Toronto offers to graduate stud are: Doctor of Philosophy (PH.D.), Master of Phil sophy (PHIL.M.), Master of Arts (M.A.), Conjun M.A. and Diploma in Russian and Eastern Europe Studies, Master of Science (M.SC.), Master of Busi Administration (M.B.A.), Master of Laws (LL.M. Doctor Juris (D.JUR.), Master of Surgery (M.S.) Master of Applied Science (M.A.SC.), Master of Architecture (M.ARCH.), Master of Engineering (M.ENG.), Master of Science in Forestry (M.SC.F Master of Science in Dentistry (M.SC.D.), Master Music (MUS.M.), Doctor of Music (MUS.DOC.), M of Social Work (M.S.W.), Doctor of Social Wor (D.S.W.), Master of Library Science (M.L.S.), M of Education (M.ED.), Doctor of Education (ED. Master of Science in Pharmacy (M.SC.PHM.), Ma of Science in Urban and Regional Planning (M.SC.(PL.)), Master of Museology (M.MUSEOL.

Master of Science in Nursing (M.SC.N.). A diploma in Development Studies also is offered. Available also are postgraduate courses offered by professional divisions leading to the following degrees: Bachelor of Education. Postgraduate diploma and specialty training courses are also offered by certain of the faculties and schools which are listed below:

Faculty of Architecture, Urban and Regional Planning and Landscape Architecture (Division of Urban and Regional Planning), Faculty of Dentistry, Faculty of Forestry, School of Hygiene, Institute of Child Study, Faculty of Medicine (Division of Postgraduate Medical Education and Division of Rehabilitation Medicine), School of Business, School of Social Work, and Faculty of Arts and Science.

In the graduate summer session, the programmes available include graduate courses for credit toward higher degrees, supervision for research and independent study, and honour undergraduate courses for those requiring prerequisite work in order to enter graduate programmes.

Inquiries about admission and general regulations concerning graduate degrees should be directed to the Secretary, School of Graduate Studies, University of Toronto. Inquiries about post-graduate diploma and other non-degree courses should be directed to the Secretary of the Faculty, College, School or Institute concerned.

Colleges for Undergraduates

There are at present eight undergraduate Colleges. University, Victoria, St. Michael's, Trinity, New and

Innis are situated on the St. George Campus. Scarborough College is located in eastern Metropolitan Toronto. Erindale College is near the western boundary of Metropolitan Toronto. Every student who is enrolled in the Faculty of Arts and Science must register in one of these eight Colleges.
Undergraduates enrolled in divisions of the Universi other than the Faculty of Arts and Science may app for admission to New College or to Innis College.

University College, established in 1853, is the origin Provincial Arts and Science College. Students may take programmes leading to the Bachelor of Arts, Bachelor of Sciences and Bachelor of Commerce degrees.
The College is centrally located on the main campu University College offers many facilities to its students, including the Laidlaw Library, with its spaci reading and reference rooms; the Refectory where cafeteria service is provided; and the Women's Uni 79 St. George St., a centre for all undergraduate women of University College.
The Sir Daniel Wilson Residence and Whitney Hal offer living accommodation for 185 men and 220 women respectively.
For further information, write to the Registrar, U versity College, University of Toronto, Toronto 1 Ontario, or consult the *University College Bulleti* which is supplied to all Ontario High Schools.

Victoria College, established in 1836 as a Methodi foundation under a Royal Charter which prohibits use of religious tests for students and staff, entere into federation with the University of Toronto i 1892 and, since 1926, has been related to the Uni Church of Canada. It is open to students of all

religious denominations. Courses are offered leading to the degrees of Bachelor of Arts, Bachelor of Science and Bachelor of Commerce of the University of Toronto.

The College is situated on a 15-acre site in the north-east corner of Queen's Park. Facilities include residence and dining accommodation for both men and women students, a library of 138,000 volumes, gymnasium and students' union and a new academic building completed in 1966.

For further information, write to the Registrar, Victoria College, University of Toronto, Toronto 181.

Trinity College was founded as a university in 1851. It entered federation with the University of Toronto in 1904, and participates in the courses leading to the Bachelor of Arts, Bachelor of Science and Bachelor of Commerce degrees of the University of Toronto. With the advantages of a small college on a large campus, Trinity, situated on Hoskin Avenue, offers a full range of facilities to its students, including dining hall and residence accommodation for 220 men. A separate modern building contains classrooms, staff offices and areas for student activities.

St. Hilda's College, a constituent College of the University of Trinity College, on Devonshire Place, provides residence and dining accommodation for 125 women.

For further information, write to the Registrar, Trinity College, University of Toronto, Toronto 181, Ontario.

St. Michael's College was established in 1852 under the direction of the Basilian Fathers. In 1906, St. Michael's entered the university federation as an Arts College preparing students for university degrees. It is open to students of all denominations.

St. Michael's in conjunction with the University of Toronto offers programmes in Arts, Sciences and Commerce. Degrees are awarded by the University of Toronto.
The College is situated on Queen's Park Crescent w a site of 13 acres adjoining the Campus of the Uni- versity of Toronto. There are 3 teaching buildings, library, student residences for men and two wome residences, St. Joseph's College, and Loretto Colle Other services include a Collegiate Church and Chapel, a dining hall, student cafeteria, and a stude faculty centre.
For further information write to the Registrar, St. Michael's College, University of Toronto, Toront 181, Ontario.

New College, one of the constituent colleges of the university, was established in 1962. It is a multifac college, accepting students from the professional divisions of the university as well as those registere Arts and Science. Its two modern buildings on the St. George campus contain classrooms, library an reading rooms, commonrooms, dining halls and sn bar, and residence accommodation for 291 men a 389 women. For further information consult the N College brochure which is supplied to all Ontario H Schools or write to the Registrar, New College, U versity of Toronto, Toronto 181, Ontario.

Innis College, at present in temporary quarters on St. George Campus, provides academic and socia facilities for men and women students in all facu The College has limited residential space availabl student co-operative houses on campus. Applicati for residence accommodation should be made to t Residence Co-ordinator of Innis College.

The College maintains a Writing Laboratory to assist students in developing the skills required for any assignments involving writing. In September 1969 Innis College introduced experimental courses which focus on contemporary themes and problems. For further information, write to the Registrar, Innis College, University of Toronto, Toronto 181, Ontario.

Scarborough College located in the east end of Metropolitan Toronto, is one of the University's newest colleges, and offers the four years of the Arts and Science Programme. Students at Scarborough College are able to take all their subjects within their college. The College also offers a full-scale Extension programme comparable to the Extension programmes offered on the University's other campuses. Prospective students should apply to the Director of Admissions of the University of Toronto. Information about the College may be obtained from the Registrar, Scarborough College, University of Toronto.

Erindale College opened its first building on its 200-acre campus in September 1967. The campus is located on the east side of Mississauga Road, one mile north of Number 5 highway.

This year, the College offers the complete New Programme of the Faculty of Arts and Science, University of Toronto. Applicants for Erindale College should apply on the regular University of Toronto application forms to the Director of Admissions, University of Toronto, and indicate Erindale as their choice of College.

Students may use the First Year of the New Programme as a means to qualify for entrance to the Faculty of Dentistry and the first two years for en-

trance into Medicine. Courses may also be chosen leading to qualification for Type A and Type B certificates of the College of Education.
For further information, consult the Erindale Colle Calendar which is supplied to the local high schools write or telephone the Registrar of Erindale College University of Toronto (Tel. 828–5231).

14 Other Information

UNIVERSITY DIVISIONS NOT ELSEWHERE MENTIONED IN THIS CIRCULAR

The College of Education, the Connaught Medica Research Laboratories, the Banting and Best Institu the David Dunlap Observatory, and a number of interdisciplinary institutes and centres: Institute fo Aerospace Studies, Institute of Bio-Medical Electronics, Institute of Computer Science, Centre of Criminology, Centre for Culture and Technology, Centre for the Study of the Drama, Institute of Ea Science, Great Lakes Institute, Centre for Linguis Studies, Centre of Mediaeval Studies, Institute for Quantitative Analysis of Social and Economic Poli Pontifical Institute of Mediaeval Studies, Centre f Russian and East European Studies, Centre for Ur and Community Studies, Centre for Industrial Rel tions, Institute of Applied Statistics, Institute for History and Philosophy of Science and Technolog Institute of Medical Science. The Royal Conserva of Music of Toronto is also within the framework the University. The University is well equipped f advanced study and research in all divisions.

MASSEY COLLEGE

Massey College, a residential College for male graduate students, has places for approximately 70 students of the School of Graduate Studies as residents, and for another 25 as non-residents. The appointments, which are made by a Selection Committee, are divided as evenly as possible between men working in the Humanities and in the Sciences at the University of Toronto.

The College provides living accommodation, dining and common room facilities, and a library stocked and designed for research studies. For further information write to the Master of Massey College, c/o University of Toronto, Toronto 181, Ontario.

THE LIBRARY

The Library collection exceeds two and a half million volumes, 350,000 microtexts, 65,000 maps, and 35,000 other items. These figures include the holdings of the central University Library, more than forty-five libraries in colleges, faculties and departments of the University, and the libraries of federated, affiliated and related institutions. The new Humanities and Social Science research library is at present rising on its site at the corner of St. George and Harbord streets.

Besides its extensive specialized services, the University Library administers several undergraduate collections on campus. The largest undergraduate collection, the Wallace Room, consists of over 75,000 volumes and has photocopy, typing and microform-reading equipment adjacent to the reading areas. Information concerning the use of the library is available in a *Student's Guide to the University Library*,

supplemented by audiovisual programmes and specia bibliographic seminars. Copies of the *Guide* are available at the Circulation and Reference counters of most libraries in the University.

COUNSELLING SERVICES FOR STUDENTS

Members of the teaching staff, the staff of the Office Admissions and the Office of Student Awards, the Registrars of the Colleges, the Secretaries of the Faculties, Schools and Institutes, and many other members of the staffs of the University and its Colleg are glad to assist students in planning their academi programmes, and to give them general help and advice.
In addition there is a Student Health Service (described below), a Placement Service, a Housing Service, an International Centre and an Advisory Bureau.

STUDENT HEALTH SERVICE

The University Health Service offers a partial but reasonably comprehensive medical service for students, including a required medical examination an chest x-ray for all new students. In addition, an outpatient clinic type of service is available to studen throughout the academic year for treatment and advice, and an infirmary service (October 1st to Ma 15th) for treatment of minor illnesses. Psychiatric consultation and counselling are available as is als extensive treatment and care for athletic injuries.

STUDENT FACILITIES

Exceptional facilities for recreation, dining, readin debate, music, art and theatre are provided in Har

House, which is the cultural, recreational and athletic centre for men. The athletic wing of Hart House has five gymnasia, indoor track, a swimming pool and rifle range. Outdoor athletic facilities include Varsity Arena, Varsity Stadium field and quarter-mile track, and four regulation playing fields on the campus. The Benson Building houses all the physical education and athletic activities of the women of the University. It includes the Margaret Eaton Memorial Library, lecture and seminar rooms and common rooms. In addition, it contains a swimming pool, five gymnasia, indoor archery range, golf practice range and an individual exercise room.

The International Student Centre occupies historic Cumberland House at 33 St. George St. It was established to provide services for overseas students and to stimulate interaction among Canadian and overseas students.

STUDENT GOVERNMENT

Every College, Faculty and School has its own student organization, and all elect members to the campus-wide Students' Administrative Council, or SAC. Student government is engaged both in providing social and cultural services and in encouraging students to become engaged in the academic needs of the University and the challenges of the world student movement.

BUILDINGS AND ENROLMENT

There are some 100 buildings on the St. George Campus, and an extensive construction programme is under way. The 1969–70 full time winter enrolment was 26,344.

May 1970

The Undergraduate Admission Handbook is published annually by the Office of Admissions, University of Toronto, as a guide for prospective students to the courses offered by the University and the requirements for admission.

The following individuals would be pleased to receive your comments or additional enquiries:

E. M. Davidson, Director of Admissions, (416) 928–2194

(Mrs.) Elizabeth Wilson, Student Enquiry Officer, 928–2135

W. A. Hill, Special Officer (Secondary School Liaison) 928–2771

University of Toronto

Faculty of Applied Science and Engineering

Calendar 1970-1971

University of Toronto Press
1970

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CALENDAR 1970

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CALENDAR 197

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FALL TERM, 1970

[J]uly 1	Wednesday	Dominion Day. Buildings closed.
August 3	Monday	Civic Holiday. Buildings closed.
August 24	Monday	Students of the III Year, Course 1, report at Survey Camp.
August 31	Monday	Students of the III Year, Course 9, report at Survey Camp. Fall examinations commence.
September 1	Tuesday	Students in II Year, Course 6, report for Analytical Chemistry Lab.
September 7	Monday	Labour Day. Buildings closed.
September 10	Thursday	Registration in person of the I Year from 9:30 a.m. to 12 noon and from 2:00 p.m. to 4:30 p.m. in the Galbraith Building. Meeting of Faculty Council.
September 11	Friday	Registration in person of the II Year from 9:30 a.m. to 12 noon and of the III Year from 2:00 p.m. to 4:30 p.m. in the Galbraith Building. Dean's address to the I Year at 9:00 a.m. in Convocation Hall. Preliminary instruction to the I Year.
September 12	Saturday	Registration in person of the IV Year from 9:30 a.m. to 12 noon in the Galbraith Building.
September 14	Monday	Lectures and laboratory work commence at 9:00 a.m.
September 21	Monday	Opening address by the President to the students of all Faculties at 2:00 p.m. in Convocation Hall. Lectures and laboratory classes withdrawn from 1:45 p.m. to 3:10 p.m.
October 1	Thursday	Meeting of Faculty Council.
October 9	Friday	Meeting of Senate.
October 12	Monday	Thanksgiving Day. Buildings closed.
December 4	Wednesday	Meeting of Faculty Council.
December 11	Wednesday	Remembrance Day.

November 13	Friday	Meeting of Senate.
November 26	Thursday	IV Year Employment Interviews.
November 27	Friday	IV Year Employment Interviews.
November 28	Saturday	IV Year Employment Interviews.
December 1	Tuesday	Meeting of Faculty Council.
December 11	Friday	Last day of lectures for Fall Term. Meeting of Senate.
December 14 to December 22	Monday Tuesday	Study period and examinations in Fall Term courses.
December 25	Friday	Christmas Day. Buildings closed.

SPRING TERM 1971

January 1	Friday	New Year's Day. Buildings closed.
January 4	Monday	Spring Term begins.
January 8	Friday	Meeting of Senate.
January 12	Tuesday	Meeting of Faculty Council.
January 15	Friday	Last day for payment of the second instalment of fees.
February 3	Wednesday	Meeting of Faculty Council.
February 12	Friday	Meeting of Senate.
February 15 to February 19	Monday Friday	Study week. Lectures and laboratory classes withdrawn.
March 4	Thursday	Meeting of Faculty Council.
March 12	Friday	Meeting of Senate.
April 4	Monday	Meeting of Faculty Council.
April 8	Thursday	Last day of lectures for Spring Term.
April 9	Friday	Good Friday. Buildings closed.
April 19	Monday	Annual Examinations commence.
May 4	Tuesday	Meeting of Faculty Council.
May 14	Friday	Meeting of Senate.
May 24	Monday	Victoria Day. Buildings closed.

The Faculty of Applied Science and Engineering

MINISTRATIVE STAFF

Dean: J. M. Ham, B.A.SC., S.M., SC.D.(M.I.T.)
Executive Assistant and Secondary Schools Liaison Officer:
. Hewitt, B.SC.(QU.), M.S., PH.D.(BIRM.)
Associate Dean: G. B. Craig, M.A.SC., PH.D.
Assistant Dean and Secretary: J. A. Gow, B.A.SC.
Assistant Secretary: W. J. Dowkes, B.A.SC.

The Faculty of Applied Science and Engineering in the University of Toronto offers the widest range of undergraduate and postgraduate studies in engineering in Canada. The four year Bachelor of Applied Science (B.A.Sc.) undergraduate program is offered in Civil, Chemical, Electrical, Geological, Industrial and Mechanical Engineering, in Metallurgy and Materials Science and in Engineering Science. The Engineering Science program offers specific options in Aerospace, Chemical, Computer Science, Electrical, Geophysics, Materials Science, Nuclear and Thermal Power and Physics.

The Faculty offers, through the School of Graduate Studies, postgraduate programs of the Master of Applied Science (M.A.Sc.), the Master of Engineering (M.Eng.) and the Doctor of Philosophy (Ph.D.). Through the immense diversity of the resources of the University it is possible to do research in bio-engineering (engineering and medicine), in environmental engineering (urban planning and the control of pollution of air, water and land), in the history of technology, etc. This remarkable pattern of bridges linking the arts, sciences and professions in studies of man, his ideas and works adds a distinctive vitality and range to engineering at Toronto.

There are some 2200 undergraduate students and 600 postgraduate students. Undergraduates are taught not only by the staff of the Faculty but also by staff of University departments in Chemistry, Geology, Mathematics, Physics, English, History,

Philosophy and Political Economy. On the staff of the Faculty alone there are sor 160 professors.

From its historic beginnings in the School of Practical Science (S.P.S.) in t eighteen-seventies, the Faculty has grown since 1906 as an integral and senior part the University. For students an important historical fact is that the Engineering Socie the student society of the Faculty, with its "Cannon" and "LGMB" band, is the old engineering organization of any formal kind in Canada.

The Faculty is located on the main campus in a rectangle bounded on the so by College Street, the west by St. George Street, the north by Convocation Hall a on the east by Taddle Creek Road where, in the days of Canadian Confederati there was indeed a creek so named.

The administrative offices are located in the southwest corner of the Galbra Building at 35 St. George Street. Students and visitors may obtain information a assistance here.

SUMMARY OF STUDENTS IN ATTENDANCE — *Session 1969–1970*

COURSE		1	3	4	5	6	7	8	9	TO
Year	I	87	88	51	140	90	117	20	12	
	II	78	103	82	73	95	143	21	16	
	III	63	83	97	58	84	130	8	9	
	IV	64	67	85	56	76	89	6	8	
TOTAL		292	341	315	327	345	479	55	45	2
Special Students										

General Information Admission and Registration

l details of the University of Toronto undergraduate admissions are contained in Undergraduate Admission Handbook 1970–71 obtainable on request from the ice of Admissions, University of Toronto, Toronto 181, and available in all Ontario ondary schools. Inquiries about admission to the Faculty of Applied Science and gineering should be directed to the above-mentioned office.

he right is reserved to limit the number of students admitted to any course in Faculty.

ADMISSION REQUIREMENTS

TARIO GRADE 13 REQUIREMENTS:

nding in the following subjects, with an overall average of 70% for Engineering ence, and 64% for all other courses:

thematics (A and B); Physics; Chemistry; and an additional subject or subjects prising 2 credits selected from the Grade 13 subjects approved for purposes of mission to the University.

t is strongly recommended that Ontario Grade 13 candidates have Grade 12 standing t least six subjects (excluding Physical Education). The subjects chosen should ude at least five of the following subjects and at least one subject from each of four groups.

i English

i French; German; Greek; Italian; Latin; Russian; Spanish

i History (Parts 1 and 2); Geography (Parts 1 and 2)

v Mathematics (Parts 1 and 2); Science (Physics and Chemistry)

above requirements are applicable to candidates seeking admission to the session 0–71. Commencing in the session 1971–72 admission will be granted, depending the number of places available, to candidates from Ontario secondary schools demonstrate good standing, based upon the following evidence:

(i) Completion of secondary school studies, including a full year of academic work at the Grade 13 level. The Grade 13 program should include Mathematics A, Mathematics B, Physics and Chemistry, but students who have substituted another subject for one of the latter three subjects will also be

considered. For admission to the program in Engineering Science, super standing is required.

(ii) A recommendation by the secondary school last attended regarding fitn for university studies.

(iii) A complete academic report for the three final years of secondary school.

(iv) Results of standardized tests offered by the Service for Admission to Coll and University.

2. APTITUDE AND ACHIEVEMENT TESTS

Ontario students will present the results of all standardized tests offered in the sec dary schools. Other students may improve their competitive position by taking aptitude test of the College Entrance Examination Board, Box 592, Princeton, N Jersey 08540, U.S.A.

3. EQUIVALENT CERTIFICATES

The following certificates are usually accepted as equivalent to Ontario Grade although individual subjects cannot always be equated. Candidates offering Se Matriculation programs from provinces other than Ontario must offer at least subjects and satisfy the subject requirements specified for the course of their cho Specific details on subjects and standards required for the course must be reque well in advance of the application deadline.

CANADA:

Alberta, Manitoba, Nova Scotia, Saskatchewan – Grade 12.
British Columbia, New Brunswick – Grade 13, or First Year University
Newfoundland – First Year Memorial University.
Prince Edward Island – First Year at the University of Prince Edward Island.
Quebec – Senior High School Leaving Certificate; appropriate C.E.G.E.P. program English Catholic Senior High School Leaving Certificate (5th Year High – Grade 1 First Year C.E.G.E.P.
Other certificates will be considered.

ENGLAND, WEST INDIES, EAST AND WEST AFRICA, HONG KONG

Standing in five subjects, of which at least two must be at advanced level, or stanc in four subjects of which at least three must be at advanced level on the follov certificates. In either case passes are required in Physics, Chemistry, and an acc able mathematics subject. At least two of these must be at advanced level.

(i) General Certificate of Education.

(ii) School and Higher School Certificates.

(iii) University of Hong Kong Matriculation Certificate.

(iv) Hong Kong English School Certificate from 1965, renamed the Certificat Education (English) in 1968. Advanced-level standing in appropriate subj is required in addition.

IA, PAKISTAN

c. with high standing.

TED STATES, CENTRAL AND SOUTH AMERICA

st Year University standing (normally 30 semester hours) in acceptable subjects m an accredited institution. Students with high school diploma and C.E.E.B. vanced Placement examinations will be considered.

ENGLISH FACILITY

ndidates whose mother tongue is not English may be required to meet an appro- te standard in a recognized test of English facility such as the University of chigan English Language Test, the Certificate of Proficiency in English issued by Universities of Cambridge or Michigan, or the Test of English as a Foreign Lan- ge (T.O.E.F.L.).

MATURE STUDENTS

ndidates 25 years of age or older who have lived in Ontario for a minimum period one year may request special consideration if they have not completed the regular mission requirements in full. In order to be admitted to the Faculty of Applied ence and Engineering all such candidates must have Grade 13 or equivalent paration in mathematics, physics and chemistry. Interested candidates should sult the Office of Admissions for further information.

APPLICATION PROCEDURES

Candidates must submit an application form and supporting documents to the ce of Admissions, University of Toronto, Toronto 181.

Supporting documents include all final secondary school certificates held. These tificates must indicate the subjects studied and grades obtained. If a certificate is available at the time of application, candidates must indicate the exact name of certificate to be presented for admission, and the subjects included therein, as well the approximate date available. A notarized English translation must accompany tificates which are in a language other than English or French.

n addition a student who has previously attended a University must submit the owing:

a) Official transcripts issued by the University or College previously attended, ng in detail the courses completed, with the standing and grades in each. Trans- pts or a supporting letter from the Registrar of the University or College must icate that the candidate has been granted honourable dismissal and is eligible for admission to the institution concerned in the session for which he seeks admission he University of Toronto;

(*b*) Official statements or calendars giving full information on the content of t University courses covered by the transcripts submitted.

For application forms and further information about admission requirements, cc sult the Office of Admissions, stating in the first letter what credentials will be offer with a listing of subjects and grades obtained.

The closing date for the receipt of applications is June 1. Only in circumstanc which the Committee on Admissions deems exceptional will a late application considered.

7. EARLY ADMISSION

(Ontario Grade 13 students only)

Ontario Grade 13 students with good school records may be offered admission early as June 11.

Students wishing to be considered for Early Admission should ensure that th applications are forwarded by their schools not later than April 1.

8. CANDIDATES WHO HAVE PREVIOUSLY FAILED IN UNIVERSITY WORK

Candidates with a previous failure in university work may be considered individua on their merits; candidates with two previous failures are normally refused admissic

9. PROCEDURE FOR REGISTRATION

Detailed instructions concerning registration will be mailed to returning and nev admitted students before the beginning of each academic year.

10. HEALTH REQUIREMENTS

Every person admitted to the University as an undergraduate must, at the time his or her first medical examination by the University Health Service, present sat factory evidence of successful vaccination within three years prior to the date of t examination, or must be vaccinated by the examining physician.

COLLEGES

With the establishment of New College and Innis College, which are open to stude of all faculties, it is now possible for students of the Faculty of Applied Science a Engineering to become members of a college. Membership in a college is not obli tory, and application for membership is at the option of the student.

Students entering the First Year who are interested in becoming members of eit college should indicate their choice in the space provided on the University's a mission application form. A college fee of $15 is required upon acceptance.

The facilities of Innis College and New College are described below.

INNIS COLLEGE

Innis College was constituted on July 1, 1964, and admitted its first students in the following September. It is a multi-faculty college of the University of Toronto, and includes undergraduate students in all Faculties and Schools of the University.

A special feature is the Writing Laboratory. This service offers assistance to Innis College students in the skills and methods of writing essays and other academic reports. A staff of experienced teachers is available to give individual instruction.

The College has limited residential space available in houses on campus. Separate application for residence accommodation must be made directly to the Residence Co-ordinator of Innis College.

Students entering First Year will be invited to apply for membership after they have been accepted into their Faculty or School. Students entering the Second to Fourth Years who wish to join the College should obtain an application form from the Registrar, Innis College, University of Toronto.

A special college fee of $15 is payable to the Chief Accountant of the University of Toronto. This payment is made after the applicant has received notice of his acceptance by Innis College.

NEW COLLEGE

New College is a multi-faculty co-educational college; in addition to students from the Faculty of Arts and Science those from other Faculties and Schools are eligible for membership. This gives students from all divisions of the University the opportunity to participate in the activities of a college and to associate with students in other fields of study. Tutorial classes are provided for First Year students in some subjects.

The new building, centrally located on the west campus, provides academic, social and dining facilities for all members of the College and in addition accommodates nearly 300 male students in residence.

Students applying for membership in the College who wish accommodation in the residence must apply on the prescribed form which may be obtained from the Dean of Students, New College.

RESIDENCE ACCOMMODATION

DEVONSHIRE HOUSE

Devonshire House, the University Residence for Men, accepts students from all Faculties. The facilities of the residence include a library, music listening room, music practice room, common rooms, kitchenettes, laundry room, television and games

rooms. It does not have a dining hall. Members may take their meals at Hart House Howard Ferguson Hall, or New College, all located nearby.

Application forms may be obtained from the Secretary to the Dean, Devonshir House, University of Toronto. Application should be made as early as possible.

NEW COLLEGE

The residence facilities of New College, and the procedure for application, ar described in the entry under Colleges, above.

OTHER COLLEGES

Each of the four Arts Colleges also maintains a Men's Residence, into which som engineering students may be accepted. Further information may be obtained fron University College – Dean of Men; Victoria College – Senior Tutor; Trinity Colleg – Registrar, Trinity College; St. Michael's College – Dean of Men.

HOUSING SERVICE

For the convenience of those students who are not able to find accommodation i the University and College residences, the University Housing Service maintains listing of rooming houses, flats, apartments and homes. Information may be obtaine by telephoning 928-2542.

Off-campus housing of this nature is not subject to University regulation. Howeve every effort is taken to make the information on the accommodation as complete a possible and students are encouraged to assist in this effort by reporting on the qualit of the accommodation that they have occupied.

CAMPUS CO-OPERATIVE RESIDENCE INCORPORATED offers residence and apartmen accommodation for graduate and undergraduate students. Total occupancy is 300 i residence, half male, half female, and 50 in apartments. Meals are provided, an non-residents are invited to eat at the Co-op Dining Rooms. Since the Universit of Toronto has no official connection with Campus Co-operative Residence, Inc., in quiries should be addressed direct to Campus Co-operative Residence Incorporated 395 Huron Street, Toronto 181, Ontario.

ROCHDALE COLLEGE offers student accommodation of varying forms. Single and doubl rooms, suites, and apartments will be offered at reasonable rates. Total accommodatio will be about 850 students, both male and female. A large cafeteria is contained withi the building. Students may take advantage of the educational program of Rochdal College on either a full or part-time basis if they so desire. Since the University o Toronto has no official connection with Rochdale College, all inquiries should b addressed direct to Rochdale College, Reservations Office, 395 Huron Street, Toront 181, Ontario.

ARTU COLLEGE

Tartu College opened September, 1969, to offer accommodation to single graduate nd professional faculty students. 444 single rooms and 15 double rooms are avail- ble. Groups of six will have their own cooking facilities. Single rooms will be $85 month and doubles $75 a month. A rebate system brings the rents down to $70 and 60 per month respectively, if the residents do their own cleaning and stay the full 2 months. Tartu College is located at the corner of Madison Avenue and Bloor treet. Since the University of Toronto has no official connection with Tartu College, l enquiries should be addressed direct to Mr. G. C. Sloan, Reservations Office for artu College, 39 Prince Arthur Avenue, Toronto, Ontario. Telephone: 925-2420.

T. ANDREW'S-UNIVERSITY DAY NURSERY

This day nursery, established and supported by the University of Toronto, the raduate Students' Union and the Students' Administrative Council, provides pre- hool education and day care facilities for children of University of Toronto udents. Children aged two to five years are accepted.

The nursery, located at St. Andrew's United Church, 117 Bloor Street East, is ell equipped and staffed and is licensed under the Day Nursery Act, Province of ntario. It operates from 8:30 a.m. to 5:45 p.m. throughout the winter and summer ademic sessions. Fees are reasonable, and noon meals and morning and afternoon acks are provided.

Priority of enrolment is given to children of University students, although children f other members of the University community will be considered.

Information may be obtained from the nursery (telephone 921-7078) or from the hool of Graduate Studies.

HE UNIVERSITY OF TORONTO CAREER COUNSELLING AND LACEMENT CENTRE

The Placement Centre, located at 581 Spadina Avenue, is open from 8:45 a.m., 5 p.m., each week-day. The staff of the Centre maintain lists of part-time, perma- nt and summer employment opportunities in a wide variety of fields including the rious branches of engineering. Engineering undergraduates are invited to drop in to scuss careers and employment problems.

Students looking for summer jobs should register at the Centre early in the aca- mic term. This is important because job priorities are established on the basis of gistration dates. Also, to be eligible for assistance under the Ontario Student Aid lan, it is necessary for a student who has *not* obtained summer employment to have oth registered at the Placement Centre and to have sought employment. The Centre

will provide students who comply with these regulations with a letter for use wit his O.S.A.P. application.

Early registration is also advisable for the fourth year permanent employment in terviews which are organized by the Centre each year in the second week in Decem ber. Early registrants are given first choice of available interview times.

Students are given an opportunity to explore a variety of careers at a lecture an discussion series on "Careers in Industry, Government, and the Professions", pre sented by the Centre each year during the month of October. Watch the Varsity an Toike-Oike for specific career topics and dates.

IV Fees, Deposits and Expenses

FEES

. Undergraduate students in the Faculty of Applied Science and Engineering must ay annual fees according to the schedule listed below. The total fee in each case is ade up of the academic fee and incidental fees; all incidental fees are payable in e first term.

Students will receive by mail in August a fees form and instructions for the payent of fees. In order to avoid delay in registration at the opening of the session it recommended that at least the first term instalment of fees be forwarded by return ail before the end of August.

Fees may be paid by certified cheque, money order or personal cheque payable the University of Toronto at par, and mailed to the Fees Department, University f Toronto, Toronto 181.

Payment of at least the First Term instalment must be made on or before the pening day of the session. An admit-to-lectures card cannot be issued until the udent has complied with this requirement.

The Second Term instalment of fees, if not already paid, is due on the opening ay of the second term and must be paid not later than January 15. After this date additional fee of $3 per month or portion thereof (not exceeding $10), will be posed until the whole amount is paid. All fees for the session must have been paid full before the student can be admitted to the annual examinations.

Adjustment of fees for students who withdraw is made up to the twenty-fourth eek of the session.

Fees, residence dues and other charges set forth in this calendar are subject to ange by the Board of Governors.

CHEDULE OF FEES

*Year Academic Year	*Academic Fee	†Incidental Fees	Total Fee (if paid in one instalment)	First Term Instalment	Second Term Instalment
IV	$650	$67	$717	$392	$328

Women					
I–IV	$650	$39	$689	$364	$328

*The Academic Fee includes the following fees:
Tuition; Library and Laboratory Supply; one Annual Examination; Laboratory Fee and Degree.
†These Incidental Fees include the following fees:
For men – Hart House; Students' Administrative Council; Athletic; Health Service Engineering Society; Faculty Athletic Association.
For women – Students' Administrative Council; Athletic; Health Service; Engineerin Society.

LATE REGISTRATION FEE

Any student who registers after the last date for normal registration in his or he own faculty or school is required to pay a late registration fee of $10 plus $1 for eac day of delay to a maximum of $20.

EQUIVALENT CERTIFICATE FEE

Each student who has been admitted to the First Year upon a certificate or certif cates granted outside the Province of Ontario and covering all or any part of th admission requirements, must pay a fee of $5.

ADVANCED STANDING FEE

Each student who has been admitted to advanced standing from another universi or college, must pay a fee of $10.

SPECIAL STUDENTS FEES

The fee is $95 per subject, payable to the Fees Department.

SUMMARY OF STUDENTS' EXPENSES

The following approximate statement of expenses will give the student a general id of the cost of obtaining an education in the Faculty of Applied Science and En neering in the University of Toronto, exclusive of personal expenses:

1. Fees, see schedule page 17.
2. Board and lodging, per week $25
3. Books and instruments, per year ..... about $1
4. Miscellaneous personal expenses $250

Programs and Degrees

UNDERGRADUATE PROGRAMS

The Faculty offers the following programs leading to the degree of Bachelor of Applied Science:

Civil Engineering (Program 1)
Mechanical Engineering (Program 3)
Industrial Engineering (Program 4)
Engineering Science (Program 5)
Chemical Engineering (Program 6)
Electrical Engineering (Program 7)
Metallurgy and Materials Science (Program 8)
Geological Engineering (Program 9)
Aerospace Engineering (offered as an option in Engineering Science. See page 63.)

The curricula of the various programs are set out in detail in Section VI. All programs require attendance for four academic sessions. Full-time attendance during the academic session is required, except in the case of students taking the First Year on a part-time basis through the Division of University Extension (see below).

FIRST YEAR — DIVISION OF UNIVERSITY EXTENSION

The First Year program (Division A only) is offered through the Division of University Extension for students interested in part-time evening study. Completion of this program qualifies the student for entry into the Second Year of all courses except Engineering Science. As there is no provision in the Division of University Extension for courses beyond the first-year level, students wishing to complete their studies for the degree must enter into full-time study in the regular courses in the Faculty of Applied Science and Engineering.

Information regarding the First Year Extension Program may be obtained from the Degree Courses Section, Division of University Extension, 84 Queen's Park, Toronto 1.

GRADUATE STUDY AND RESEARCH

Facilities are available in the Departments of the Faculty for postgraduate study and research leading to the degrees of Master of Engineering (M.Eng.), Master of Applied Science (M.A.Sc.), and Doctor of Philosophy (Ph.D.). For further information see the Calendar of the School of Graduate Studies.

SPECIAL STUDENTS

Graduates of the University of Toronto and of recognized universities who wish to take one or more undergraduate subjects may be registered as special students in the Faculty of Applied Science and Engineering, subject to the approval of the teaching department concerned. Application must be made to the Secretary of the Faculty.

INTERIM HIGH SCHOOL ASSISTANT'S CERTIFICATE TYPE A

Graduate of engineering programs may be admitted to Type A certificate courses at the College of Education, University of Toronto, if they submit official transcripts which indicate that they have sufficient academic credits.

Graduates of engineering programs who lack sufficient academic credits for admission to Type A courses at the College of Education may be eligible for admission to the Type B course and later for endorsement of the Type B certificate.

Inquiries regarding admission to the Type B course should be addressed to the Registrar, the College of Education, University of Toronto. Inquiries regarding endorsement of Type B certificates or admission to Type A certificate courses should be addressed to the Director, Committee on Advanced Standing, the College of Education, University of Toronto.

ASSOCIATIONS OF PROFESSIONAL ENGINEERS

Graduation from the Faculty of Applied Science and Engineering leads to registration as a Professional Engineer in the various Associations of Professional Engineers throughout Canada.

VI Curriculum

In this era of rapid technological change, the professional role of engineering is to build bridges between the world of science and the world of men, and to do so with ingenuity, economy and sensitivity. The talent of the engineer is an amalgam of curiosity, physical insight, capacity for mathematical analysis, ability to work with people and to develop effective designs to achieve particular goals.

The early years of the four-year curriculum are designed to give students a command of the basic scientific principles upon which effective solutions to engineering problems are based. Although specialization into particular fields of study increases in the third and fourth years, the essential purpose of every academic program is to open the student's mind out to those general qualities which distinguish good engineering of any kind. These qualities transcend in importance the particular subject content in which they are projected.

On the following pages of this section the curriculum of each program is set forth in detail. As a guide to students in apportioning their time a weight factor is shown opposite each course of instruction. The weight factor represents the number of hours per week, including both scheduled class-room time and home work, that the average student is expected to devote to that course. This weight factor is also used in the computation of the student's weighted average in the work of the year.

The program and regulations regarding the courses of study and examination, contained in this Calendar, hold good for this academic year only, and the Faculty of Applied Science and Engineering does not bind itself to adhere for the whole period of a student's course to the conditions here laid down.

Communications relating to curricula, instruction, and examinations in the Faculty of Applied Science and Engineering should be sent to the Secretary of the Faculty.

For information regarding the courses of study leading to the post-graduate degrees, Master of Engineering, Master of Applied Science, and Doctor of Philosophy, see the Calendar of the School of Graduate Studies, which gives full particulars.

First Year Studies

Chairman For First Year Studies:

P. E. Burke, B.E. (N.S. TECH.), M.A.SC.

Coordinating Staff

V. C. Hamacher, B.A.SC.(WATERLOO), M.SC.(QUEEN'S), PH.D.(SYR.) Department of Electrical Engineering
H. R. MacCallum, M.A., PH.D. Department of English
R. A. Ross, M.A., PH.D. Department of Mathematics
S. Sandler, M.A.SC. Department of Chemical Engineering
G. T. Will, M.A.SC. Department of Civil Engineering
A. Straughen, B.SC.(LOND.) M.A.SC. Department of Electrical Eng.
G. D. Scott, M.A., PH.D. Department of Physics
I. W. Smith, M.A.SC. Department of Mechanical Engineering
C. A. Wrenshall, B.E. (SASK.) Department of Civil Engineering

FIRST YEAR STUDIES

The First Year program is designed to build a strong foundation in the basic disciplines which underlie the whole field of engineering. There are two First Year curricula – Division A, the standard curriculum and Division B, the enriched curriculum for students intending to pursue the Engineering Science program. Admission to the Division B curriculum is granted only to students with better-than-average ability in mathematics and the sciences. (See page 9 for admission requirements)

Students entering Division A must elect one of the following courses in which they expect to continue in second year – Civil Engineering, Mechanical Engineering, Industrial Engineering, Chemical Engineering, Electrical Engineering, Metallurgy & Material Science, and Geological Engineering. Subject to the availability of places a student who successfully completes the First Year in Division A may request to transfer to any other course within that Division.

Students who complete the First Year in Division B with a weighted average of 66% or higher may continue in the Engineering Science program in the second year. Those who achieve a weighted average between 60% and 66% may proceed

to the second year of other programs in the Faculty, the choice of program being dependent on the availability of places. The First Year in Division B may not be repeated without the special permission of the Council of the Faculty.

Students wishing to transfer to a different program at the end of the first year should make application to the Secretary of the Faculty not later than July 15, 1970.

FIRST YEAR CURRICULUM — DIVISION A

Civil Engineering
Mechanical Engineering
Industrial Engineering
Chemical Engineering
Electrical Engineering
Metallurgy and Materials Science
Geological Engineering

COURSES	COURSE NO.	HOURS PER WEEK					
		First Term			*Second Term*		
		Lect.	*Lab.*	*Wt.*	*Lect.*	*Lab.*	*Wt.*
Chemistry	600, 601	2	3	7	2	3	7
Engineering Graphics	135	1	3	5	1	3	5
English*	2110	2	—	5	2	—	5
Mathematics:							
Algebra and Analytic Geometry	2410	2	1	6	2	1	6
Calculus	2411	2	1	6	2	1	6
Mathematical Applications and Computer Programming	13	½	2	3	½	2	3
Physics:							
Electricity	700	2	¾	5	2	¾	5
Applied Mechanics	100	2	¾	5	2	¾	5
Structure and Properties of Matter	2501	2	1½	6	2	1½	6
Engineering Design Project (optional)	11	—	—	—	—	—	1
Practical Experience	20	—	—	—	—	—	—

* or other non-technical elective. See page 63.

FIRST YEAR CURRICULUM — DIVISION B
Engineering Science

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
Chemistry	602, 601	2	3	7	2	3	7
Engineering Graphics	135	1	3	5	1	3	5
English*	2110	2	—	5	2	—	5
Mathematics:							
Algebra and Geometry	2415	2	3	7	2	3	7
Calculus	2416	2		7	2		7
Computer Programming	3310	—	—	—	1	1	4
Physics:							
Electricity	701	2	—	5	2	—	5
Statics	101	2	—	5	—	—	—
Elements of Physics I	2511,2512	2	2½	8	2	2½	8
Engineering Design Project (optional)	11	—	—	1	—	—	1

*or other non-technical elective. See page 63.

Civil Engineering

TAFF OF THE DEPARTMENT

rofessor and Chairman of the Department:
. C. Kenney, B.ENG.(MC.G.), D.I.C.(IMP.), M.SC.(LOND.), PH.D.(LOND.)

ssociate Professor and Assistant Chairman of the Department:
M. Uzumeri, B.A.SC., M.A.SC.

rofessors:
A. DeLory, B.ENG.(MC.G.), M.A.SC., D.I.C.(IMP.), PH.D.(LOND.) (*on leave for the session*)
Hershfield, B.SC., C.E.(MAN.), M.A.SC.
. W. Huggins, B.A.SC., M.A.SC.
H. Mills, B.SC.(WITWATERSRAND)
R. Rice, B.SC.(QU.)
Schwaighofer, DIP. ING.(GRAZ.), M.S.(PENN. ST.), PH.D.(PENN. ST.), DR. TECH.(GRAZ.)

sociate Professors:
D. Barber, C.D., B.A.SC., M.A.SC.
P. Bernhart, DIP. ING.(GRAZ.), DR.TECH.(GRAZ.)
A. Collins, B.A.SC., M.S.(ILL.), PH.D.(ILL.)
C. Davidson, B.SC., C.E., B.SC., E.E.(MAN.), M.A.SC.
M. Davis, B.SC.(QU.), M.SC.(PURDUE)
R. Frizzle, B.SC., E.E.(N.S.TECH)
J. Haynes, B.A.SC.
W. Heinke, B.A.SC., M.A.SC., PH.D.(MCM.)
H. Jones, B.A.SC., M.S.(NORTHWEST.), PH.D.(NORTHWEST.)
L. Macklin, B.A.SC.
I. Robinsky, B.A.(BEIRUT), B.SC.(BEIRUT), M.S.(HARVARD), PH.D.
A. Selby, B.A.SC., M.B.A., PH.D.(ILL.)
Timusk, B.A.SC., M.A.SC., PH.D.(LOND.)
Vlcek, B.SC.F.(N.B.), M.A.SC., D.SC.(PRAGUE)
A. Wrenshall, B.E.(SASK.)

P. M. Wright, B.E.(SASK.), M.SC., PH.D.(COLORADO)
Visiting Associate Professor J. Ganczarzyk, M.SC., D.SC., DOC.(LABIL.)

Assistant Professors:
S. J. G. Bird, B.A.SC., M.A.SC.
M. P. Collins, B.E. (CANTERBURY), PH.D. (N.S.W.)
R. C. Gunn, B.A.SC., M.A.SC. (*on leave for the session*)
P. Lampert, DIP. ING.(S.F.I.T.), DR.SC. TECHN.(S.F.I.T.)
K. Meipoom, B.A.SC., M.A.SC.
V. R. Riley, B.A.SC., PH.D.(CANTAB.)
G. K. Rodgers, B.A.SC., M.SC.(U.B.C.), PH.D.
G. N. Steuart, B.SC.(SASK.), M.SC.(CALIF.), PH.D.
A. K. F. Turner, B.SC.(QU.), M.A.(COLUMBIA), PH.D.(PURDUE)
G. T. Will, B.A.SC., M.A.SC.

Lecturers:
V. P. Borecky, DIP. ING.(PRAGUE), M.A.
E. Karuks, B.A.SC., M.A.SC.
R. G. Rice, B.A.SC., M.SC(M.I.T.)

CIVIL ENGINEERING

Program 1

The program in Civil Engineering is broad and comprehensive. It is designed to produce an adequate basic understanding of the technical aspects of the principal fields (structural, municipal and sanitary, transportation, geotechnical surveying) in which Civil Engineers function with at least an acceptable level of competence in the activities (including executive and administrative) involved in each of those fields; and to provide for the acquisition, by the student, of superior competence in the particular field of his choice. To encourage a well-rounded education non-technical subjects and humanities are included. The objective of the program as a whole is the well-informed creative engineer possessing innovative and directive capabilities.

For the First Year curriculum see Division A, page 23.

SECOND YEAR CIVIL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
Calculus	2420s	2	1	6	2	1	6
Economics*	2720	2	—	6	2	—	6
Engineering Materials	109s	2	—	5	2	3	7
Surveying	153	2	1½	6	1	1½	3
The Engineer and his Environment	137	1	3	6	1	3	6
Computer Programming	145	2	2	6	—	—	—
Engineering Presentation	138	1	3	5	—	—	—
Strength of Materials	110	3	—	7	—	—	—
Design of Structures	111	—	—	—	2	2	6
Engineering Mechanics	108	—	—	—	2	—	5
Environmental Engineering	180	—	—	—	2	—	4
Geology	2900	—	—	—	2	2	6
Practical Experience	20	—	—	—	—	—	—

*or other non-technical elective. See page 63.

THIRD YEAR CIVIL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
Design of Determinate and Indeterminate Structures	112	2	2	7	3	2	10
Fluid Mechanics and Hydraulics	333	2	—	5	2	3	8
Soil Mechanics and Foundations	191	2	1½	6	2	1½	7
History*	2330	2	—	6	2	—	6
Engineering Mathematics	142	3	2	9	—	—	—
Probability and Statistics	141	2	—	6	—	—	—
Transportation Systems	185	3	2	9	—	—	—
Municipal Engineering	182	—	—	—	2	2	7
Elective (see p. 29)		—	—	—	3	2	9
Survey Camp	158						
Practical Experience	20	—	—	—	—	—	—

*or other non-technical elective. See page 63.

FOURTH YEAR CIVIL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK					
		First Term			*Second Term*		
		Lect.	*Lab.*	*Wt.*	*Lect.*	*Lab.*	*Wt.*
Thesis†	40	—	—	9	—	—	12
Administration and Management	133	2	—	6	—	—	—
English*	2140	2	—	6	—	—	—
Elective		3	2	9	—	—	—
Elective		3	2	9	—	—	—
Elective		3	2	9	—	—	—
Elective†		3	2	9	—	—	—
Public Speaking	132	—	—	—	—	2	3
Philosophy and Science*	2040	—	—	—	2	—	6
Elective		—	—	—	3	2	9
Elective		—	—	—	3	2	9
Elective		—	—	—	3	2	9

*or other non-technical elective. See page 63.

†If a 21 unit thesis is elected, only three elective courses are required in fall term.

ELECTIVE COURSES

Each student is advised to consult with a member of the staff in establishing t electives that the student will include in his program. A student is free to choose elective courses from those listed below, each of which will have a weight of 9 un In some cases, depending upon student interest and staff availability, one or m electives may be offered in both terms, or not at all.

First Term Electives

105 Advanced Strength of Materials
114 Advanced Engineering Materials
116 Reinforced Concrete I
119 Indeterminate Structures
170 Photogrammetry and Remote Sensing
183 Pollution Control Engineering
187 Traffic Engineering
189 Air Photo Interpretation
193 Foundations and Earth Work
345s Water Resources and Hydrology

ond Term Electives

Reinforced Concrete II (Prerequisite: 116 Reinforced Concrete I)
Behaviour and Design of Steel Structures
Construction Engineering*
Engineering Applications of Surveying*
Geodetic Control Surveys
Transportation Engineering
s Engineering Geology
s Hydraulic Engineering
40s Urban and Regional Planning*

h the approval of the Chairman of the Department a student may include, as t of his required elective program, courses that are offered outside the Department provided that the University Department, Faculty or Institute offering the rses has agreed to accept him for those courses.

ailable to Third and Fourth Year students.

Mechanical Engineering

STAFF OF THE DEPARTMENT

Professor and Head of the Department:
G. R. Lord, B.A.SC., S.M.(M.I.T.), PH.D.

Professors:
W. D. Baines, B.SC.(ALTA.), M.S., PH.D.(IOWA)
F. C. Hooper, B.A.SC., D.I.C.(LOND.)
P. B. Hughes, B.SC.(MCG.)
L. E. Jones, B.SC.(C.E.) (MAN.), M.A.SC., PH.D.
F. P. J. Rimrott, DIP. ING.(KARLSRUHE), M.A.SC., PH.D.(PENN. STATE), DR. ING.(DARMSTADT)
I. W. Smith, M.A.SC.

Associate Professors:
A. B. Allan, M.A.SC.
I. G. Currie, B.SC.(STRATHCLYDE), M.A.SC.(B.C.), PH.D.(CAL.I.T.)
R. C. Fenton, DIP. ING.(BUD.), PH.D.(N.S.W.)
J. F. Keffer, M.A.SC., PH.D.
V. Klemes, DIP. ING.(BRNO), C.SC.(BRATISLAVA)
H. J. Leutheusser, DIP. ING.(KARLSRUHE), M.A.SC., PH.D.
D. S. Scott, B.SC.(QUEEN'S), M.SC.(QUEEN'S), PH.D.(NORTHWESTERN)
J. VandeVegte, DIP. ING.(DELFT), M.A.SC., PH.D.

Assistant Professors:
A. H. Abdelmessih, B.M.E.(CAIRO), M.S.(OKLAHOMA STATE), PH.D.
D. L. Allen, B.SC.(DAL.), B.E.(N.S. TECH.), M.A.SC., PH.D.
J. S. Ansari, B.E.(OSMANIA), M.S.(PURDUE), PH.D.(PURDUE)
J. P. Dugan, B.SC.(PENN. MIL. COLL.), M.S.(NORTHWEST.), PH.D.(NORTHWEST.)
R. C. Flanagan, B.SC.(N.B.), PH.D.(B.C.)
G. E. Godfrey, M.A.SC.
D. F. James, B.SC.(QUEEN'S), M.S.(CAL. TECH.), PH.D.(CAL. TECH.)
D. McCammond, B.SC.(QU. BELFAST), PH.D.(QU. BELFAST)
P. S. Shen, B.SC.(LOND.), M.SC.(BIRMINGHAM), PH.D.(LOND.)

Tabarrok, B.SC.(WOLVER. & STAFF.), D.PHIL.(OXON)
A. Ward, B.SC.(TEX.), PH.D.(NORTHWEST.)

ecial Lecturer:
E. Burke, B.A.(LOND.).

ECHANICAL ENGINEERING

ogram 3

aditionally associated with the art and science of power generation and the machines d devices by which power is usefully applied and controlled, Mechanical Engineer-, like other branches of the engineering profession, participates actively in the vancement of knowledge and interprets this knowledge in the design and develop-nt of practical systems.

In manufacturing industry, in the transportation and power utilities, in the high-formance field of air and space engineering, or in engineering aspects of major rks and structures, the mechanical engineer finds professional occupation, either employee or consultant. His responsibility will generally be for the superintendence operations and personnel, for the design of products and processes, and may lude the administration of enterprises.

The curriculum in Mechanical Engineering provides an analytical training in thematics and the physical sciences designed as a disciplinary basis for active fessional practice. Recognition is given, however, to the purer scientific and philo-hical concepts essential to postgraduate study and research.

For the First Year curriculum see Division A, page 23.

COND YEAR MECHANICAL ENGINEERING

URSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
nomics*	2720	2	—	7	2	—	7
culus	2424	3	1½	10	—	—	—
cuit Theory & Measurements	717	3	3	10	—	—	—
namics	351	3	1½	10	—	—	—
chanics of Materials	107	3	3	11	—	—	—
ferential Equations	380	—	—	—	2	—	6
sign of Machine Elements	356	—	—	—	2	3	8
terials Science	837	—	—	—	3	1½	9
bability and Statistics	2422	—	—	—	3	1½	10
ory of Machines	358	—	—	—	2	3	8
ctical Experience	20	—	—	—	—	—	—

other non-technical elective. See page 63.

THIRD YEAR MECHANICAL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	W
Dynamic Measurement Laboratory	362	—	3	4	—	3	3
Engineering Mathematics I	386	3	1	8	—	—	—
Engineering Mathematics II	387	—	—	—	3	1	8
Fluid Mechanics I	334	2	—	4	2	3	8
Heat Engineering Laboratory I	310	—	3	3	—	3	4
Systems Dynamics	360	1	—	2	1	—	2
Engineering Thermodynamics	309	2	—	4	2	—	4
History*	2330	2	—	6	2	—	6
Electronics	743	2	3	7	—	—	—
Heat Engineering	308	2	—	4	—	—	—
Vibrations	361	2	—	4	—	—	—
Electric Machines	747	—	—	—	2	3	7
Engineering Design	363, 364	—	—	—	2	3	8
Practical Experience	20	—	—	—	—	—	—

*or other non-technical elective. See page 63.

FOURTH YEAR MECHANICAL ENGINEERING

Applied Fluid Mechanics	344	2	1½	6	2	1½	6
Applied Mechanics	367	2	1½	6	2	1½	6
Control Systems	391, 392	2	1½	6	2	1½	6
Heat Transfer	319	2	1½	6	2	1½	6
Thesis	40	—	3	6	—	3	4
Engineering Law	3440	1	—	1	—	—	—
English*	2140	2	—	6	—	—	—
Philosophy and Science*	2040	—	—	—	2	—	6
Numerical Analysis	2443	—	—	—	2	—	4
And two of:							
Engineering Mathematics III	390	2	—	4½	2	1½	6
Fluid Mechanics II	346	2	—	4½	2	1½	6
Manufacturing Science	374	2	—	4½	—	—	—
Design Methodology	375	—	—	—	2	1½	6
Microscopic Thermodynamics	322	2	—	4½	2	1½	6
Thermal Power Generation	323	2	—	4½	2	1½	6

*or other non-technical elective. See page 63.

Industrial Engineering

AFF OF THE DEPARTMENT

fessor and Chairman of the Department:
Bernholtz, M.A., PH.D.(CAL. TECH.)

ociate Professor and Assistant Department Chairman:
W. P. Anderson, M.A.SC.

fessors:
V. Abrams, A.B.(CALIF.), PH.D.(CALIF.)
J. Foley, M.A.(GLASGOW)
Porter, M.SC.(MANCH.), PH.D.(MANCH.) (*on leave for the session*)

ociate Professors:
Abrham, M.A.(CHARLES), PH.D.(CHARLES)
H. Cohn, M.A.
A. Lambe, B.A.SC.(U.B.C.), M.SC.(STAN.), PH.D.(STAN.)
. C. Templeton, B.A., A.M.(PRINC.), PH.D.(PRINC.)

istant Professors:
A. Buzacott, B.SC.(SYDNEY), B.E.(SYDNEY), M.SC.(BIRMINGHAM), PH.D.(BIRMINGAM)
A. Cunningham, M.A.(OXFORD), PH.D.(ADELAIDE)
J. M. Posner, B.A.SC., PH.D.
. Turksen, B.S.(PITTS.), M.S.(PITTS.), PH.D.(PITTS.)
. Vitalis, B.B.A.(MINN.), M.A.(MINN.)

turers (part-time)
K. Mackworth, B.A.SC., M.A.(HARVARD)
E. Pickett, B.A.SC., M.A.
. Saipe, B.A.SC., M.A.SC.

cial Lecturers (part-time):
I. Tusiewicz, B.SC.(ENG.)(LOND.), M.A.SC., M.B.A.
anderheyden, B.A.SC.
. J. L. Vitalis, B.A.(MINN.)

INDUSTRIAL ENGINEERING

Program 4

The modern view of Industrial Engineering is that of a field concerned with analysis, design improvement and operation of integrated systems of men, mater and equipment. This concept crystallized when it became clear that certain mod technical fields, including operational research, control theory, computer science, pro bility and statistics, systems theory and human factors engineering, constituted a b of knowledge particularly useful in the operation and management of modern b ness, industry and government.

As a logical outcome of this development, the course in Industrial Engineering established in 1958 to provide graduates in engineering specializing in the theory practice of these subjects. This specialization rests upon a substantial foundation science and mathematics, in fundamental engineering disciplines including fluid chanics, applied thermodynamics, electric science, mechanics of materials, mater science and automation, and in such subjects as economics, organizational struct financial control and the behavioural sciences.

For the First Year curriculum see Division A, page 23.

SECOND YEAR INDUSTRIAL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.
Calculus	2420	2	1	9	2	1
Elements of Industrial Engineering	414	2	—	5	2	—
Economics*	2720	2	—	6	2	—
Probability and Statistics I	2423	2	2	9	2	2
Computers and Programming I	422	2	2	9	—	—
Materials Science	834	3	3	9	—	—
Electrical Engineering	722	—	—	—	3	3
Mechanics of Materials	102, 104	—	—	—	2	3
Practical Experience	20	—	—	—	—	—

*or other non-technical elective. See page 63.

THIRD YEAR INDUSTRIAL ENGINEERING

Accounting	2734	2	—	8	2	—
History*	2330	2	—	6	2	—
Operational Research	424	2	2	8	2	2
Computers and Programming II	423	2	2	8	—	—

URSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
merical Analysis I	2433	2	2	8	—	—	—
ntrol Engineering	394	—	—	—	2	2	8
lustrial Engineering Seminar	462	—	—	—	—	2	2
obability and Statistics II	2430	—	—	—	2	2	8
ctical Experience	20	—	—	—	—	—	—
nd one subject from each of Groups 1 and 2							
oup 1							
Differential Equations	2432	2	2	8	—	—	—
ndustrial Relations	463	2	1	8	—	—	—
oup 2							
Fluid Mechanics & Thermodynamics	337	—	—	—	2	3	8
Numerical Analysis II	2434	—	—	—	2	2	8

other non-technical elective. See page 63.

URTH YEAR INDUSTRIAL ENGINEERING

gineering Law	3440	1	—	2	—	—	—
glish*	2140	2	—	6	—	—	—
losophy and Science*	2040	—	—	—	2	—	6
ustrial Engineering Seminar	471	—	2	2	—	—	—
sis	421	—	3	6	—	3	8
nd 1 subject from each of Groups 1 & 2							
up 1							
lan as a Machine	427	2	—	8	—	—	—
ifferential Psychology	426	2	—	8	—	—	—
up 2							
lan as an Information rocessor	425	—	—	—	2	—	8
rganizational Psychology	428	—	—	—	2	—	8

other non-technical elective. See page 63.

FOURTH YEAR INDUSTRIAL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK				
		First Term			*Second Term*	
		Lect.	*Lab.*	*Wt.*	*Lect.*	*Lab.*
and a selection of at least 24 units (3 subjects in each term) from the following:						
Control of Processes	415	2	1½	8	2	1½
Management Science	418	2	1½	8	2	1½
Production Systems	477	2	1½	8	—	—
Stochastic Models	476	2	1½	8	—	—
System Simulation	429	2	1½	8	—	—
Advanced Industrial Engineering	478	—	—	—	2	1½
Information and Optimization	430	—	—	—	2	1½
Management Information Systems	488	—	—	—	2	1½
Mathematical Programming	483	—	—	—	2	1½
Technical Elective	—	—	—	8	—	—

Engineering Science

CULTY MEMBERS OF THE DIVISION

airman of the Division:

Etkin, M.A.SC., F.R.S.C., F.C.A.S.I. (Professor of Aerospace Engineering)

mbers of the Division:

T. Aust, M.A.SC., PH.D. (Professor of Metallurgy and Materials Science)

P. Biringer, DIP. ING(BUD.), M.SC.(STOCKHOLM), PH.D. (Professor of Electrical Engineering)

F. D. Duff, M.A., PH.D., F.R.S.C. (Professor and Chairman of the Department of Mathematics)

F. Graydon, M.A.SC., PH.D.(MINN.), (Professor and Chairman of Chemical Engineering)

N. P. Hume, M.A., PH.D. (Professor of Physics and Computer Science)

L. Armstrong, M.A., PH.D. (Professor of Physics)

VandeVegte, DIP. ING.(DELFT), M.A.SC., PH.D. (Professor of Mechanical Engineering)

GINEERING SCIENCE

rgram 5

Engineering Science program is designed for students whose primary interest is he applications of science to modern technology, and who wish to prepare themes for careers in research, development or teaching. The undergraduate course vides excellent preparation for post-graduate work in a wide range of specialities Engineering, Science and Mathematics, and the majority of graduates from this rse do proceed to graduate study. Students who graduate from the course and do continue their studies are nevertheless well qualified to fill a variety of positions ndustry and Government.

he courses offered are of a high standard, so that only students with better-than-vage ability in, and aptitude for, mathematics and science can expect to succeed in n. For this reason, admission is granted only to those who attain an average of at t 70% in the Ontario Grade XIII or its equivalent (see p. 9). The First Year of Course may not be repeated without the special permission of the Council of the ulty, and continuation into the second year is restricted to those whose weighted

average grade in first year is 66% or higher. Those who achieve the general prom tion average of 60% in the first year may continue without condition into the secc year of the Faculty, the choice of program being subject to the availability of places

The curricula for the first two years of the course are common for all stude In the third and fourth years, there are a few common subjects, and considera latitude in the selection of the remainder. There are available eight carefully plan *options*,† each of which provides a specialized preparation for a particular bra of applied science. In addition students have the opportunity not to enroll in any of these options, but to take an *elective program*, as outlined below.

For the First Year curriculum see Division B, page 24.

SECOND YEAR ENGINEERING SCIENCE

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	W
Calculus	2425	3	2	9	3	2	9
Economics*	2720	2	—	6	2	—	6
Electrical Circuits	715	2	1½	7	2	1½	7
Elements of Physics II	2521,2522	3	1½	8½	3	1½	8
Physical Chemistry	608,609	2	1½	6	2	1½	6
Mechanics of Materials	103	2	—	4	—	—	—
Probability & Statistics	2427	3	2	9	—	—	—
Computer Languages	3320	—	—	—	2	—	6
Numerical Methods	2429	—	—	—	2	2	7

*or other non-technical elective. See page 63.

Each student will be asked to indicate before the end of Second Year his intenc course of study in Third Year. This information is for Faculty planning only, and not binding on the student.

Students may elect

(a) to enrol in one of the 8 options listed, in which case up to three elective su stitutions of subjects are permitted, or

(b) to select a program that does not conform to any one of the options.

In case (a), substitutions must be on a basis of roughly equal weights, so that i modified program has approximately the same weight as the standard option. In c (b) the weight shall average approximately 48 units for the two terms. In both cas the selection of electives is subject to the constraints imposed by the current tim table, and by prerequisites. Electives may be chosen from among the subjects offered other options in Engineering Science; from among the subjects listed in this Calend

†For further information about the Aerospace Option, see page 61.

t are offered in programs other than Engineering Science; or, with the approval of offering department, from subjects offered in other Faculties.

N ALL CASES, ELECTIVE CHOICES (other than those explicitly provided for in options) MUST BE APPROVED BY A MEMBER OF THE DIVISION AFF.

IRD YEAR ENGINEERING SCIENCE

RSES	COURSE NO.	HOURS PER WEEK					
		First Term			*Second Term*		
		Lect.	*Lab.*	*Wt.*	*Lect.*	*Lab.*	*Wt.*
IMON SUBJECTS:							
erential Equations	2438	2	—	5	2	—	5
ory of Functions	2437	2	—	5	2	—	5
tory*	2330	2	—	6	2	—	6
ION 5A, *Aerospace*							
chanics	1030	2	—	5	2	—	5
ntum Physics	2533	2	—	5	2	—	5
tronics	740	2	—	5	2	1½	7
chanics of Structures	1034, 1035	2	1½	6	2	3	8
d Mechanics	1028, 1029	2	3	8	1	1½	4
sics Laboratory	2540 or 2541	—	3	3	—	—	—
istical Physics	2531	—	—	—	2	—	5
ION 5C, *Chemical*							
mic & Molecular Struct.	2631	2	—	4	2	—	4
m Eng Problems & Lab	642	—	9	10	—	6	6
m Eng Thermodynamics	640	2	—	4	2	—	4
tronics	740	2	—	5	2	1½	7
hetic Chemistry	626	2	—	4	2	—	4
d Mechanics	338	2	3	6	—	—	—
m Eng Rate Processes	641	—	—	—	3	1½	8
ION 5CS, *Computer Science*							
tronics	740	2	—	5	2	1½	7
sical Electronics	739	2	1	6	2	1	6
ntum Physics	2533	2	—	5	2	—	5
puter Organization	3341	2	2	7	—	—	—
ching Theory	760	2	1	7	—	—	—
gramming & Data Struct.	3338	—	—	—	3	6	14
stical Physics	2531	—	—	—	2	—	5

other non-technical elective. See page 63.

THIRD YEAR ENGINEERING SCIENCE (CONTINUED)

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
OPTION 5E, *Electrical*							
Mechanics	1030	2	—	5	2	—	5
Physical Electronics	739	2	1	6	2	1	6
Quantum Physics	2533	2	—	5	2	—	5
Electromagnetic Fields	754	2	2	7	—	—	—
Physics Laboratory	2540 or 2541	—	3	3	—	—	—
System & Signal Analysis	744	2	1½	6	—	—	—
Electronic Circuits I	737	—	—	—	2	3	9
Physics of Solids & Fluids	2534	—	—	—	2	—	5
Statistical Physics	2531	—	—	—	2	—	5
OPTION 5G, *Geophysics*							
Electronics	740	2	—	5	2	1½	7
Mechanics	1030	2	—	5	2	—	5
Physics Laboratory	2538 or 2539	—	3	3	—	3	3
Principles of Geology	2920	2	2	7	2	2	7
Quantum Physics	2533	2	—	5	2	—	5
Geophysics	2537	2	—	5	—	—	—
Physics of Solids & Fluids	2534	—	—	—	2	—	5
Statistical Physics	2531	—	—	—	2	—	5
OPTION 5M, *Materials Science*							
Materials Science	838	2	—	5	2	—	5
Metallurgical Thermodynamics	830	2	2	7	2	2	7
Physical Metallurgy Laboratory	822	—	3	3	—	3	3
X-ray Crystallography	2901	—	2	3	—	2	3
Physics Laboratory	2540	—	3	3	—	—	—
Solid State Science	820	2	—	5	—	—	—
Physics of Solids & Fluids	2534	—	—	—	2	—	5
Plastic Deformation and Mechanical Properties	821	—	—	—	2	—	5
and *one* of:							
Chemical Bonding	634	2	—	5	2	—	5
Mechanics	1030	2	—	5	2	—	5
Physical Electronics	739	2	1½	7	2	1½	7
OPTION 5NT, *Nuclear & Thermal Power*							
Experimental Stress Analysis	365	2	—	5	1	3	5
Fluid Mechanics	340	2	3	8	2	3	8

HIRD YEAR ENGINEERING SCIENCE (CONTINUED)

URSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
at Engineering	313	1	3	5	1	3	5
chanics	1030	2	—	5	2	—	5
ysics Laboratory 2538 or	2539	—	3	3	—	3	3
antum Physics	2533	2	—	5	2	—	5
tistical Thermodynamics	303	—	—	—	2	—	5
TION 5P, *Physics*							
chanics	1030	2	—	5	2	—	5
ysical Electronics	739	2	1	6	2	1	6
ysics Laboratory 2538 or	2539	—	3	3	—	3	3
antum Physics	2533	2	—	5	2	—	5
ctromagnetic Fields	754	2	2	7	—	—	—
ysics of Solids & Fluids	2534	—	—	—	2	—	5
tistical Physics	2531	—	—	—	2	—	5
d *one* of:							
ctronic Circuits	740	2	—	5	2	1½	7
erimental Stress Analysis	365	2	—	5	1	3	5

URTH YEAR ENGINEERING SCIENCE

IMON SUBJECTS:							
erential Equations of Mathematical Physics	2445	2	—	5	2	—	5
glish*	2140	2	—	6	—	—	—
osophy*	2040	—	—	—	2	—	6
TION 5A, *Aerospace*							
odynamics	1040,1041	2	1½	6	2	1½	6
ineering Design	1047	—	6	8	—	3	4
dynamics	1048,1049	2	1½	6	2	3	8
sis	40	—	—	6	—	—	4
nsport Phenomena	1050	—	—	—	2	—	4
d *two* of:							
ectronic Circuits, and	778	2	3	8	—	—	—
ectrodynamics	797	—	—	—	2	1½	7
sics & Mechanics of Solids	1044						
	1045	2	1½	6	2	1½	6
sics of Radiating Gases	1042						
	1043	2	1½	6	2	1½	6

other non-technical elective. See page 63.

FOURTH YEAR ENGINEERING SCIENCE (CONTINUED)

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	W
Plasmadynamics	1046	2	—	6	2	—	6
Control Systems	398, 399	2	—	5	1	3	5½
OPTION 5C, *Chemical*							
Chem. Eng. Design	666	2	6	9	2	6	9
Mass Transfer	650	2	—	4	2	—	4
Organic Chemistry	660, 661	2	—	5	1	6	7
Process Dynamics	664	2	—	5	2	3	7
Thesis	40	—	—	2½	—	—	7½
Chem. Eng. Laboratory	652	—	9	9	—	—	—
Thermodynamics of Chem. Systems	665	3	—	7½	—	—	—
Dynamics of Chem. Systems	667	—	—	—	3	—	7
OPTION 5CS, *Computer Science*							
Thesis	40	—	—	6	—	—	4
Computer Organization	3341	2	2	7	—	—	—
Electronic Circuits	778	2	3	8	—	—	—
Information Systems I	782	2	1	6	—	—	—
Numerical Solution of Initial Value Problems	2441	2	—	6	—	—	—
Theory of Computability	3342	2	—	5	—	—	—
Automata Theory	3343	—	—	—	2	—	6
Operating Systems	3344	—	—	—	2	—	5
Numerical Solution of Boundary Value Problems	2442	—	—	—	2	—	6
Switching Circuits	799	—	—	—	2	1½	7
Techniques of Optimization	787	—	—	—	3	2	10
OPTION 5E, *Electrical*							
Quantum Theory	2545	2	—	7	2	—	7
System Dynamics	766	2	1½	6½	—	—	—
Thesis	40	—	—	5	—	—	5
Electronic Circuits	778	2	3	8	—	—	—
Information Systems I	782	2	1	6	—	—	—
Wave Theory	790	2	1½	6½	—	—	—
Information Systems II	786	—	—	—	2	3	
Switching Circuits	799	—	—	—	2	1½	

OURTH YEAR ENGINEERING SCIENCE (CONTINUED)

URSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
nd one of the following:							
lectrodynamics	797	—	—	—	2	1½	7
troduction to Optimal Control	767	—	—	—	2	—	7
chniques of Optimization	787	—	—	—	3	2	10
CTION 5G, *Geophysics*							
ntrol Systems	398, 399	2	—	5	1	3	5½
ophysics Laboratory	2573	—	9	9	—	9	9
ophysical Methods	2561	2	—	7	2	—	7
ysics of the Earth	2570	2	—	7	2	—	7
esis	40	—	—	5	—	—	5
d *one* of:							
mospheric Physics	2571	2	—	7	2	—	7
assical Physics of Continua	2560	2	—	7	2	—	7
CTION 5M, *Materials Science*							
gh Temperature Physical Chemistry	842	2	3	8	2	3	8
terials Science	839	2	3	8	2	3	8
esis	40	—	—	3	—	—	7
ysics of Metals	823	3	—	6	—	—	—
eory of Metallurgical Reactions	841	2	—	6	—	—	—
terials Science Lab.	827	—	—	—	—	6	8
d *one* of:							
antum Theory	2545	2	—	7	2	—	7
id State Physics	2546	2	—	7	2	—	7
TION 5NT, *Nuclear and Thermal Power*							
ntrol Systems	398, 399	2	—	5	1	3	5½
clear Engineering	670, 671	2	3	8	2	3	8
clear Physics	2544	2	—	7	2	—	7
rmal Energy Conversion	331	3	3	9	3	3	9
esis	40	—	—	4	—	—	6
ysics Seminar	2550	2	—	7	—	—	—
at Transfer	328	—	—	—	2	—	5

FOURTH YEAR ENGINEERING SCIENCE (CONTINUED)

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
OPTION 5P, *Physics*							
Each student shall select a program that includes the common subjects, a thesis and subjects chosen from groups A and B below to a total of approximately 4 units (averaged over both terms). At least 12 units (total for two terms) must be chosen from group A.							
Thesis	40	—	—	5	—	—	5
GROUP A							
Plasmadynamics	1046	2	—	6	2	—	6
System Dynamics	766	2	1½	6½	—	—	—
Electronic Circuits	778	2	3	8	—	—	—
Wave Theory	790	2	1½	6½	—	—	—
Electrodynamics	797	—	—	—	2	1½	7
GROUP B							
Nuclear Physics	2544	2	—	7	2	—	7
Physics Seminar	2542	2	—	7	2	—	7
Quantum Theory	2545	2	—	7	2	—	7
Relativity Theory	2547	2	—	7	2	—	7
Solid State Physics	2546	2	—	7	2	—	7
Statistical Mechanics	2543	2	—	7	2	—	7
Interaction of Radiation and Matter	2553	2	—	7	—	—	—
Molecular Biophysics	2559	2	—	7	—	—	—
Molecular Physics	2555	2	—	7	—	—	—
Nuclear & Particle Physics	2557	2	—	7	—	—	—
Statistical Mechanics	2558	2	—	7	—	—	—
Cellular Biophysics	2548	—	—	—	2	—	7
High Energy Physics	2552	—	—	—	2	—	7
Magnetic Resonance	2554	—	—	—	2	—	7
Quantum Optics	2551	—	—	—	2	—	7
Solid State Physics	2556	—	—	—	2	—	7

Chemical Engineering and Applied Chemistry

TAFF OF THE DEPARTMENT

rofessor and Chairman of the Department:

. F. Graydon, M.A.SC., PH.D.(MINN.)

ssociate Professor and Assistant Head of the Department:

W. Smith, M.A.SC.(U.B.C.), PH.D.(LOND.)

rofessors:

. G. Andrews, M.A.(CANTAB.) (*Nuclear Engineering*)
G. Breckenridge, B.A.SC., PH.D.(CANTAB.)
. H. Burgess, B.CH.E., M.F.S., PH.D.(CORN.)
. E. Jervis, M.A., PH.D.
. G. MacElhinney, M.A.SC.
. W. Missen, M.SC.(QU.), PH.D.(CANTAB.)
. H. Rapson, M.A.SC., PH.D.
H. Spinner, M.A.SC., PH.D.
. Trass, B.S.E.(PRINC.), SC.D.(M.I.T.)
. Wayman, M.A., PH.D.
. L. Williams, B.A., M.SC.(WESTERN), PH.D.(MCGILL)

ssociate Professors:

. Basmadjian, DIP. ING. CHEM.(ZURICH), M.A.SC., PH.D.
. E. Charles, B.SC.(LOND.), M.SC., PH.D.(ALTA.)
. A. M. Hewer, B.A.SC. (*Mining Engineering*)
. L. Hummel, B.S.(PURDUE), PH.D.(IOWA)
. F. Hunter, M.A.SC., PH.D.
. Luus, M.A.SC., A.M., PH.D. (PRINCETON)
. R. Piggott, M.SC., PH.D.(LOND.) (*Materials Science*)
Sandler, M.A.SC.
T. Woodhams, M.SC.(U.W.O.), PH.D.(BROOKLYN) (*Materials Science*)

Assistant Professors:
D. Barham, B.SC.ENG., D.I.C., PH.D.(LOND.)
C. E. Chaffey, B.SC., PH.D.(MCGILL) (*Materials Science*)
J. S. Hewitt, B.SC.(QU.), M.S., PH.D.(BIRM.) (*Applied Nuclear Studies*)
D. Mackay, B.SC., PH.D. (GLASGOW)
C. R. Phillips, B.E., PH.D.(ADELAIDE)
V. R. Riley, B.A.SC., PH.D.(CANTAB.) (*Materials Science*)
P. Y-C. Wang, B.SC., PH.D.(MCGILL) (*Biomedical Electronics*)

Lecturers:
C. C. Barnes, B.SC.(QU.)
J. Binkiewicz, DIP. CHEM. ENG.(LWOW)
Z. May, DIP. ING. CHEM.(WARSAW)
Miss M. J. Phillips, B.A.SC., M.A.(BRYN MAWR), PH.D.(J.H.U.)
A. Rozeiu, DIP. CHEM. ENG.(BUCHAREST)
R. B. Thompson, B.A.SC.

Special Lecturer:
C. P. Brockett, B.SC.(M.I.T.)

CHEMICAL ENGINEERING

Program 6

The chemical engineer is concerned with the development and operation of processe by means of which matter is chemically altered to a more useful form, and in th design, construction, operation and management of plant in which to effect suc changes. In addition to such obviously chemical processes as those encountered i the petroleum refining and petro-chemical industry, a great variety of industria processes involve chemistry and require the abilities of the chemical engineer. I order to equip a student to start his professional career as a chemical engineer, th undergraduate course is intended to provide him with training in the principles o the major divisions of chemistry and chemical engineering, together with the essential of other engineering subjects.

In the second term of the final year, certain elective subjects and the topic chose for the thesis allow the student to specialize according to his interests and abilitie The thesis serves as an introduction to research, and its nature may vary widel depending on the interests of the staff and students. It may, for example, be con cerned with an experimental laboratory investigation, the design of a process, or computer study of a chemical system.

For the First Year curriculum see Division A, page 23.

ECOND YEAR CHEMICAL ENGINEERING

OURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
nalytical Chemistry Laboratory	613	—	—	—	—	—	—
alculus	2420	2	1	6	2	1	6
conomics*	2720	2	—	6	2	—	6
lectrical Engineering	719	2	3	7	2	3	7
norganic Chemistry	617	1	—	2	2	—	4
lass and Heat Transfer	631	2	—	4	2	—	4
lechanics of Materials	102	2	—	4	2	—	4
hysical Chemistry	622	2	—	4	2	—	4
rocess Calculations	620	—	3	3	—	3	3
nalytical Chemistry	615, 614	2	9	12	—	—	—
hemical Engineering Science Lab	619	—	—	—	—	8	8
ractical Experience	20	—	—	—	—	—	—

or other non-technical elective. See page 63.

HIRD YEAR CHEMICAL ENGINEERING

OURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
pplied Mathematics	633	1	1	3	1	1	3
hemical Engineering Thermodynamics	640	2	2	6	2	2	6
hemical Laboratory	627	—	6	6	—	6	6
luid Mechanics	339, 632	2	3	7	2	—	4
istory*	2330	2	—	6	2	—	6
ndustrial Chemistry	630	2	—	4	1	—	2
lass Transfer Operations	650	2	1	5	2	1	5
rganic Chemistry	628	2	—	4	2	—	4
rganic Chemistry Lab	629	—	6	6	—	9	9
ractical Experience	20	—	—	—	—	—	—
eaction Kinetics	625	1	—	2	1	—	2
ractical Experience	20	—	—	—	—	—	—

or other non-technical elective. See page 63.

FOURTH YEAR CHEMICAL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK					
		First Term			*Second Term*		
		Lect.	*Lab.*	*Wt.*	*Lect.*	*Lab.*	*Wt.*
Thesis	40	—	1	2	—	18	21
Chemical Engineering Laboratory	652	—	9	12	—	—	—
English*	2140	2	—	6	—	—	—
Philosophy and Science*	2040	—	—	—	2	—	6
Public Speaking	656	—	—	—	—	2	2
and one course from each of the following seven groups:**							
I Chemical Engineering Thermodynamics	655						
Interface Kinetics	684	2	—	6	—	—	—
Molecular Thermodynamics	672						
II Plant Design	651						
Process Modelling and Simulation	653	2	3	9	—	—	—
Strategy of Process Engineering	673						
III Advanced Separation Processes	669						
Convective Heat Transfer	675	2	—	6	—	—	—
Pipeline Transportation	674						
IV Composite Materials	678						
Polymer Engineering	676	2	—	6	—	—	—
Wood Chemistry	677						
V Applied Nuclear Chemistry	668						
Ceramics	679	—	—	—	2	—	6
Co-ordination Chemistry	680						
VI Environmental Engineering	681						
Instrumental Methods	663	—	—	—	2	—	6
VII Chemical Bonding	682						
Nuclear Engineering	683	—	—	—	2	—	6
Process Control	662						

*or other non-technical elective. See page 63.

**In any one session, it may not be possible to offer all the elective courses.

Electrical Engineering

TAFF OF THE DEPARTMENT

rofessor and Head of the Department:
. R. Slemon, M.A.SC., D.I.C.(IMP. COLL.), PH.D.(LOND.), D.SC.(LOND.)

rofessor and Associate Head of the Department:
. W. Smith, B.A.SC., SC.D.(M.I.T.)

ofessors:
P. Biringer, DIP. ING.(BUD.), M.SC.(STOCKHOLM), PH.D.
S. C. Cobbold, B.SC.(LOND.), M.SC.(SASK.), PH.D.(SASK.)
M. Ham, B.A.SC., S.M.(M.I.T.), SC.D.(M.I.T.)
. Janischewskyj, M.A.SC.
F. Moody, B.SC.(SASK.)
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G. Simmons, B.SC.(LOND.), M.SC.(TEMPLE), PH.D.(LOND.), F.INST.P.
Sinclair, B.SC.(ALTA.), M.SC.(ALTA.), PH.D.(OHIO STATE)
L. Yen, B.SC.(CHIAO TUNG), M.A.SC., PH.D.

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I. P. Boulton, M.A.SC., PH.D.
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R. Dalton, B.A.SC., M.S.(NORTHWEST.)
J. Davison, A.R.C.T., B.A.SC., M.A., PH.D.(CANTAB.)
Dmitrevsky, B.A.SC., PH.D.(HARV.)
L. Henderson, B.A.SC., A.M.(MICH.)
Iizuka, B.S.(KYOTO), M.E.(KYOTO), M.S.(HARV.), PH.D. (HARV.)
J. Kravetz, B.SC.(ALTA.), M.A.SC.
R. Lang, B.SC.(U.W.O.)
S. Lee, B.ENG.(MCG.), M.ENG.(MCG.), PH.D.
McCausland, B.SC.(Q.U. BELFAST), M.SC.(Q.U. BELFAST), PH.D.(TOR., CANTAB.)
O'Beirne, B.A.(CAMB.), M.A.SC.

S. D. T. Robertson, B.SC.(QUEEN'S), D.I.C.(IMP. COLL.), M.A.SC., PH.D.
I. H. Rowe, M.A.SC., D.I.C.(IMP. COLL.), PH.D.(LOND.)
C. A. T. Salama, M.A.SC.(U.B.C.), PH.D.(U.B.C.)
R. S. Segsworth, B.A.SC.
K. C. Smith, M.A.SC., PH.D.
A. Straughen, B.SC.(LOND.), M.A.SC.
E. Llewellyn Thomas, B.SC.(LOND.), M.D., C.M.(MCG.)

Visiting Associate Professor:
A. Semlyen, D.ENG.(RUM.), PH.D.(RUM.)

Assistant Professors:
L. D. Braun, B.A.SC., M.A.SC., PH.D.
M. G. Currie, B.A.SC.
S. B. Dewan, B.SC.(PUNJAB), M.E.(ROORKEE), M.A.SC., PH.D.
V. C. Hamacher, B.A.SC.(WATERLOO), M.SC.(QUEEN'S), PH.D.(SYR.)
M. G. Joy, B.A.SC., M.A.SC., PH.D.
H. Kunov, M.SC.(DENMARK)
V. M. Ristic, DIP. ING.(BELGRADE), M.SC.(BELGRADE), M.SC.(STAN.), PH.D.(STAN.)
A. S. Sedra, B.SC.(CAIRO), M.A.SC., PH.D.
M. Sablatash, B.SC.(MAN.), M.SC.(MAN.), PH.D.(WIS.)
A. N. Venetsanopoulos, B.E.(ATHENS), M.A.SC.(YALE), PHIL.M.(YALE), PH.D.(YALE)
Z. G. Vranesic, B.A.SC., M.A.SC., PH.D.
S. Zukotynski, M.A.SC.(WARSAW), PH.D.(WARSAW)

Special Lecturers:
M. A. Albisser, M.A.SC., PH.D.
D. J. Shepley, M.D., B.A.SC.

ELECTRICAL ENGINEERING

Program 7

Electrical Engineers are concerned with all things electrical; but such a simp statement fails to convey any real notion of the great variety of activity in which the are engaged, the many aspects of their concern, or the nature of the education that the require.

Electrical engineers are, of course, still involved in the application of new knowled to the basic areas — the generation, transmission and utilization of electric power and the communication of information –but they are being faced daily wi situations not envisaged even a few years ago. They are searching continuously f new approaches that may be better suited to future needs, as for example, magnet hydrodynamic generation, microelectronics and satellite communication. There is growing demand for sophisticated electrical sensing and control equipment for a wi variety of non-electrical processes, and for electronic computers capable of the rap

rocessing of large volumes of information and the solving of increasingly complex roblems.

Within any of these areas the electrical engineer may be engaged in research, evelopment, design, manufacture, operation or management. He may have to assist her engineers and scientists in widely differing fields by supplying them with techques or insights unfamiliar to them, as for example, in the developing field of o-medical engineering, or he may have to coordinate the application of many techologies in a single project. In addition to all of this, he must accept considerable sponsibility in community affairs.

It is obvious then, from the wide range of his possible involvement, that the electcal engineer needs a professional education of great breadth and depth. In the ndergraduate course, stress is laid on building a solid foundation. The time limitation quires that only material which is essential can be included; much that might be mediately helpful must be omitted to make room for that which will still be levant for several years. On this base, the graduate will have to build his continuing ucation.

The electrical engineer makes extensive use of mathematical techniques and concpts; mathematics is thus of the utmost importance and a large portion of the course devoted to it. Fundamental subjects such as mechanics, electrical physics, chemistry d thermodynamics get considerable attention in the early years. The basic electrical gineering subjects (electromagnetic field theory, electronics, machine principles and cuit theory) follow these, with expansion and some specialization in the final year. so included are a few non-technical subjects of importance. In the final year, only e-third of the curriculum is prescribed by the department; students freely select the t of their curriculum from a wide range of elective subjects.

Electrical engineering is characterized by the relatively large proportion of its duates who proceed to post-graduate study to get advanced training in a particular a. Information on this may be obtained from the calendar and other publications the School of Graduate Studies.

For the First Year curriculum see Division A, page 23.

SECOND YEAR ELECTRICAL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
Calculus II	2421	4	2	11	—	—	—
Circuit Theory I	710	3	2	9	—	—	—
Materials Science I	819	3	1½	9	—	—	—
Electrical Laboratory	713	—	3	4	—	—	—
Dynamics	352	3	2	9	—	—	—
Numerical Methods	721	—	—	—	2	2	7
Circuit Theory II	712	—	—	—	2	2	7
Thermodynamics & Statistical Mechanics	751	—	—	—	3	1	9
Introductory Electronics	714	—	—	—	2	3	9½
Electric & Magnetic Fields	711	—	—	—	3	2	9½
Economics*	2720	2	—	6	2	—	6
Practical Experience	20	—	—	—	—	—	—

THIRD YEAR ELECTRICAL ENGINEERING

Applied Mathematics I	732	2	2	7	—	—	—
Linear Systems Theory	733	4	2	12	—	—	—
Physical Electronics I	730	2	1½	8	—	—	—
Fields and Waves	750	2	2	7	—	—	—
Electromechanical Systems I	734	2	3	8	—	—	—
Applied Mathematics II	736	—	—	—	3	2	9½
Materials Science II	835	—	—	—	2	1½	7½
Physical Electronics II	731	—	—	—	2	1½	7½
Electronic Circuits I	737	—	—	—	2	3	9½
Electromechanical Systems II	735	—	—	—	2	3	8
History*	2330	2	—	6	2	—	6
Practical Experience	20	—	—	—	—	—	—

*or other non-technical elective. See page 63.

FOURTH YEAR ELECTRICAL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK First Term Lect.	First Term Lab.	First Term Wt.	Second Term Lect.	Second Term Lab.	Second Term Wt.
Control Systems I	765	3	1½	9	—	—	—
Electronic Circuits II	768	2	3	8	—	—	—
Thesis	40	—	—	4	—	—	7
English*	2140	2	—	6	—	—	—
Philosophy*	2040	—	—	—	2	—	6
ELECTIVES – *3 to be chosen first term:*†							
Applied Mathematics III	781	2	1	7	—	—	—
Electromagnetic Theory	762	2	1	7	—	—	—
Information Processing Systems I	761	2	1	7	—	—	—
Network Theory	772	2	1	7	—	—	—
Power System Analysis	779	2	1½	7	—	—	—
Quantum Physics	777	2	1½	7	—	—	—
Semiconductor Physics	775	2	1½	7	—	—	—
Switching Theory	760	2	1	7	—	—	—
Other Technical Elective		2	1½	7	—	—	—
ELECTIVES – *5 to be chosen second term:*†							
Illumination	794	—	—	—	2	1½	7
Quantum Electronics (777 prerequisite)	784	—	—	—	2	1	7
Power System Control	780	—	—	—	2	1½	7
Radiation and Propagation (762 prerequisite)	776	—	—	—	2	1½	7
Acoustics	792	—	—	—	2	1½	7
Biomedical Engineering	796	—	—	—	2	1½	7
Communication Systems	770	—	—	—	2	3	7
Control Systems II	793	—	—	—	2	1½	7
Electrodynamics (762 prereq.)	797	—	—	—	2	1½	7
Power Semiconductor Circuits	795	—	—	—	2	1½	7
Information Processing Systems II (761 prereq.)	798	—	—	—	2	1	7
Integrated Circuits	774	—	—	—	2	1½	7
Unified Machine Theory	763	—	—	—	2	1½	7
Switching Circuits	799	—	—	—	2	1½	7
Other Technical Elective		—	—	—	2	1½	7

*For other non-technical elective. See page 63.

†Bracketed subjects can not be taken together.

Metallurgy and Materials Science

STAFF OF THE DEPARTMENT

Professor and Chairman of the Department:
C. B. Alcock, B.SC., PH.D., A.R.C.S., D.SC.(LOND.), F.R.I.C., M.I.M.M.

Professors:
K. T. Aust, M.A.SC., PH.D.
G. B. Craig, M.A.SC., PH.D.
S. N. Flengas, B.SC.(ATHENS), D.I.C.(LOND.), PH.D., D.SC.(LOND.), F.C.I.C.
H. U. Ross, C.D., M.SC.(MCG.)
J. W. Rutter, M.A., PH.D.
J. M. Toguri, M.A.SC., PH.D.

Associate Professors:
Mrs. U. Martius Franklin, PH.D.(BERLIN)
B. Ramaswami, B.SC., D.I.I.SC., M.A., PH.D.(HARVARD)
R. S. Segsworth, B.A.SC.

Assistant Professors:
W. A. Miller, PH.D.(MCG.)
G. C. Weatherly, PH.D.(CANTAB.)

Special Lecturer:
L. M. Pidgeon, M.B.E., B.SC.(OXON.), PH.D.(MCG.), F.R.S.C.

METALLURGY AND MATERIALS SCIENCE

Program 8

"Metallurgy and Materials Science" is the study of the production, structure, ar properties of the engineering materials used in structures, machines and devices.

Modern technology makes increasingly severe demands upon both metallic ar non-metallic solids; in fact, it is difficult to think of an engineering project, the bas limitations of which do not reside in the materials which are available. For exampl

erospace travel requires materials capable of withstanding extremes of heat, cold and ressure; the utilization of nuclear energy is limited only by materials which can ithstand the effects of radiation; the transistor and the computer depend upon mate- ials having special electrical and magnetic properties. As industry expands, the netallurgist or materials engineer is being called upon to play an increasingly impor- ant role in the economy.

The course is designed to place primary emphasis upon the fundamental principles hich underlie the chemical, physical and mechanical properties of solids. In the ourth year, each student is assigned an experimental problem involving original ork and, where possible, this is related to the actual research in progress in the epartment. The student is, therefore, introduced to the methods of research.

The department is equipped with modern facilities for the study of the structure nd properties of materials. This equipment includes x-ray diffraction units, an ectron beam microprobe analyzer, an electron microscope, several optical metallo- raphs, materials preparation and testing equipment, facilities for the production nd measurement of high temperatures, high vacuum equipment, etc.

For the First Year curriculum see Division A, page 23.

ECOND YEAR METALLURGY AND MATERIALS SCIENCE

OURSES	COURSE	HOURS PER WEEK					
		First Term			*Second Term*		
	NO.	*Lect.*	*Lab.*	*Wt.*	*Lect.*	*Lab.*	*Wt.*
alculus	2420	2	1	8	2	1	8
echanics of Materials	104, 106	2	—	5	1	1½	5
conomics*	2720	2	—	6	2	—	6
hysical Chemistry	801	2	2	7	2	4	9
obability and Statistics	2423	2	2	8	2	2	8
olid State Chemistry	807	2	2	7	—	—	—
tructure of Materials & Metallography	817	2	3	8	—	—	—
strumental Analysis	808	—	—	—	—	3	4
aterials Science	832S	—	—	—	3	—	7
actical Experience	20	—	—	—	—	—	—

r other non-technical elective. See page 63.

THIRD YEAR METALLURGY AND MATERIALS SCIENCE

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	Wt.
Extractive Metallurgy	802, 803	2	3	7	2	3	7
Fluid Flow and Heat Transfer	341	2	—	5	2	3	7
History*	2330	2	—	6	2	—	6
Physical Metallurgy Laboratory	822	—	3	3	—	3	3
Thermodynamics	810, 812	2	4	7	2	2	6
X-ray Crystallography	2901	—	2	3	—	2	3
Differential Equations	2432	2	2	7	—	—	—
Solid State Science	820	2	—	5	—	—	—
Numerical Analysis	2443	—	—	—	2	—	5
Plastic Deformation & Mechanical Props.	821	—	—	—	2	—	5
Technical Electives – 1 to be chosen in each term:							
Polymer Engineering	676	2	—	5	—	—	—
Physical Electronics I	730	2	¾	6	—	—	—
Materials Science Laboratory	825	—	3	5	—	—	—
Applied Nuclear Chemistry	668	—	—	—	2	—	5
Nuclear Engineering	683	—	—	—	2	—	5
Mineral Dressing	809	—	—	—	2	—	5
Extractive Metallurgy Project	829	—	—	—	—	3	5
Practical Experience	20	—	—	—	—	—	—

*or other non-technical elective. See page 63.

FOURTH YEAR METALLURGY AND MATERIALS SCIENCE

COURSES	COURSE NO.	HOURS PER WEEK *First Term* Lect.	Lab.	Wt.	*Second Term* Lect.	Lab.	W
Extractive Metallurgy	805, 806	2	3	7	2	3	7
Metallurgical Problems Laboratory	814	—	3	4	—	3	4
Thesis	40, 840	—	6	7	—	9	12
Electrical Systems	764	2	—	5	—	—	—
Physics of Metals	823, 824	3	3	9	—	—	—
Reaction Kinetics	836	2	2	6	—	—	—

FOURTH YEAR METALLURGY AND MATERIALS SCIENCE (CONTINUED)

COURSES	COURSE NO.	HOURS PER WEEK					
		First Term			*Second Term*		
		Lect.	*Lab.*	*Wt.*	*Lect.*	*Lab.*	*Wt.*
English*	2140	2	—	6	—	—	—
Philosophy*	2040	—	—	—	2	—	6
Electro-chemical Processes	813	—	—	—	2	2	6
Materials Science	815	—	—	—	3	—	7
Technical Electives – 1 to be chosen in each term:							
Composite Materials	678	2	—	5	—	—	—
Manufacturing Science	374	2	—	5	—	—	—
Ceramics	679	—	—	—	2	—	5
Powder Metallurgy	826	—	—	—	2	—	5
Physical Metallurgy Project	828	—	—	—	—	3	5

*or other non-technical elective. See page 63.

Geological Engineering

The course in Geological Engineering is an interfaculty course, the specialized cor of which is provided by the Department of Geology (Faculty of Arts and Science with assistance from several departments of the Faculty of Applied Science an Engineering. It is administered by a Course Committee the current members o which are:

E. W. Nuffield, B.A.(B.C.), PH.D., F.R.S.C., *Chairman; Professor and Chairman, De partment of Geology.*

W. D. Baines, B.SC.(ALTA), M.SC., PH.D.(IOWA); *Professor of Mechanical Engineerin*

J. G. Breckenridge, B.A.SC., PH.D.(CANTAB.), *Professor of Chemical Engineering.*

J. B. Currie, B.A.(MCM.), M.A., PH.D., *Professor of Geology.*

T. C. Kenney, B.ENG.(MCG.), D.I.C.(IMP.), M.SC.(LOND.), PH.D.(LOND.), *Professor an Chairman, Department of Civil Engineering.*

H. R. Rice, B.SC.(QUEEN'S), *Professor of Mining Engineering.*

GEOLOGICAL ENGINEERING

Program 9

Geology is the science of the earth. It includes, in a large sense, all knowledge of th earth – its origin, history, structure, composition and mineral wealth – and the physica chemical and biological processes that change the earth. It spans a wide range c sciences and requires a thorough grounding in mathematics and the basic scienc and engineering disciplines to aid in a proper understanding of the subject and i many applications. The various branches of geology include geophysics, which concerned with the investigation of the earth, particularly its structure and con position, by the methods of experimental physics; geochemistry, which may b defined broadly to include all parts of geology that involve chemical changes; an geobiology which deals with the totality of living things on the earth's surface i geologic time.

The first three years of the course in Geological Engineering provide a broad education in the fundamentals of geology and its associated disciplines. In the fourth year the course concentrates on the study of Economic Geology – the application of principles and methods of geology in the discovery, examination, evaluation and production of mineral, fossil fuel and water resources. Several options in the final year allow the student to shape his program to emphasize the study of Exploration Geology, Mining, or Soil Mechanics.

Graduation from this course leads to employment in mineral and petroleum exploration and development. Graduates are prepared for advanced study towards the M.A.Sc. and Ph.D. degrees in a number of branches of geology including Economic Geology, Geochemistry, Structural Geology and Applied Geophysics.

For the First Year curriculum see Division A, page 23.

ECOND YEAR GEOLOGICAL ENGINEERING

OURSES	COURSE	HOURS PER WEEK					
		First Term			*Second Term*		
	NO.	*Lect.*	*Lab.*	*Wt.*	*Lect.*	*Lab.*	*Wt.*
alculus	2420	2	1	6	2	1	6
conomics*	2720	2	—	6	2	—	6
eological Data Processing by Computer	2922	1	2	5	1	2	5
organic Chemistry	617	1	—	3	2	—	6
lineralogy	2921	2	4	10	2	4	10
lining	195	1	—	3	1	2	5
rinciples of Geology	2920	2	3	8	2	3	8
urveying	155, 156	1	1½	5	1	1½	5
ractical Experience	20	—	—	—	—	—	—

or other non-technical elective. See page 63.

THIRD YEAR GEOLOGICAL ENGINEERING

COURSES	COURSE NO.	HOURS PER WEEK					
		First Term			*Second Term*		
		Lect.	*Lab.*	*Wt.*	*Lect.*	*Lab.*	*Wt.*
Geological Field Trips	2937	—	—	—	—	—	—
Mechanics of Materials	104, 106	2	—	5	1	1½	5
Extractive Metallurgy	805	2	—	5	2	—	5
Mineral Identification Laboratory	2934	—	2	2	—	2	2
Petrology	2930	2	2	6	2	2	6
Physical Geochemistry	2935	3	—	6	3	—	6
Practical Experience	20	—	—	—	—	—	—
Stratigraphy and Sedimentation	2931	2	2	6	2	2	6
Tectonics	2932	1	3	6	1	3	6
History*	2330	2	—	6	2	—	6
Survey Camp	158	—	—	—	—	—	—
One of:							
Differential Equations	2432	2	1½	5	2	1½	5
Mining Technology	196	2	—	4	2	—	4
Air Photo Interpretation	189	3	2	5	—	—	—

FOURTH YEAR GEOLOGICAL ENGINEERING

English*	2140	2	—	6	—	—	—
Philosophy*	2040	—	—	—	2	—	6
Geological Field Trips	2947	—	—	—	—	—	—
Geology Field Camp	2946	—	—	3	—	—	3
Mineral Deposits	2940	2	3	9	2	3	9
Mineral Exploration	2944	—	—	—	—	3	3
Petroleum and Groundwater Geology	2941	2	3	9	2	3	9
Thesis	40	—	3	4	—	3	4
And two of:							
Exploration Geochemistry	2943	1	3	7	1	3	7
Exploration Geophysics	2568,2569	2	3	9	2	3	9
Mining	197, 198	2	3	8	2	3	8
Soil Mechanics	191	2	1½	8	2	1½	8

*or other non-technical elective.

EACHING STAFF OF THE INSTITUTE FOR AEROSPACE STUDIES

rofessor and Director of the Institute:

. N. Patterson, B.SC.(ALTA.), M.A., PH.D., LL.D., D.SC., F.R.AE.S., F.C.A.S.I., F.A.I.A.A., F.R.S.C., F.A.A.A.S.

rofessors and Assistant Directors:

. H. deLeew, DIP. ING.(DELFT), M.S. in A.E.(GEORGIA TECH.), PH.D., F.C.A.S.I. (*Assistant Director – Research.*)

I. Glass, B.A.SC., M.A.SC., PH.D., F.A.P.S., F.A.A.A.S., F.C.A.S.I. (*Assistant Director – Education*).

ofessors:

Etkin, B.A.SC., M.A.SC., F.C.A.S.I., F.R.S.C.

B. French, B.A.SC., M.SC.(BIRMINGHAM), PH.D.

S. Ribner, B.S.(CAL. TECH.), M.S.(WASH.). PH.D.(WASH.), F.A.P.S., F.A.S.A., F.C.A.S.I.

ssociate Professors:

W. Johnston, B.A.SC., M.A.SC., PH.D.

K. Korbacher, DIP. ING.(BERLIN), PH.D.(BRAUNSCHWEIG)

M. Measures, B.SC., A.R.C.S., D.I.C., PH.D.(LOND.)

C. Tennyson, B.A.SC., M.A.SC., PH.D.

J. Townsend, B.A.(SASK.), M.A.(SASK.), PH.D.

ssistant Professors:

C. Hughes, B.A.SC., M.A.SC., PH.D.

W. Locke, B.A.SC., M.A.SC.

D. Reid, B.A.SC., M.A.SC.

A. Sullivan, B.E., M.E.(N.S.W.), D.I.C., PH.D.(LOND.)

EROSPACE STUDIES

The University of Toronto offers a broad and coherent program of studies in the aerospace sciences and engineering. It is designed to prepare its graduates for work in a variety of areas including civil air transportation, design and development of

new aircraft, spacecraft and air cushion vehicles, and fundamental research in many of the relevant underlying areas of science. Future Canadian needs for air and surface transportation, satellite communications, and survey satellites are significant factors in determining the content of the courses and the research projects undertaken.

The courses of study available comprise a basic 4 year program leading to the B.A.Sc. degree, an additional year leading to the M.Eng. or M.A.Sc. degree, and a subsequent Doctoral program. The undergraduate (Bachelor's) program consists of four years in Engineering Science (option 5a), and the post-graduate programs are taken in the department of Aerospace Studies of the School of Graduate Studies.

(i) *Undergraduate Program.* The details of the undergraduate program are given in this Calendar (page 37) and are seen to consist mainly of intensive studies in the fundamentals of mathematics, physics, and the engineering sciences. In the final two years the program is oriented to the special needs of the aerospace field, and includes some highly specialized courses. The aerospace-related subjects in these two years are taught by the faculty of the Institute for Aerospace Studies. Graduates of this program are able to fill a variety of positions in education, industry and government, but the fifth year (see below) is needed to become fully qualified as an aerospace engineer.

(ii) *Graduate Program.* If the student's academic record in the undergraduate program meets the requirements for admission to the School of Graduate Studies, he may pursue during a fifth year a program as a candidate for the M.A.Sc. or M.Eng. degree in the (graduate) department of Aerospace Studies. Details of entrance regulations and courses of study are given in the Calendar of the School of Graduate Studies. The facilities of the Institute for Aerospace Studies are available to the student for research or project work. For details of research fields, assistantships, scholarships and demonstratorships, students should consult the secretary of the graduate department.

It should be noted that a student who has graduated in another branch of engineering, or in science or mathematics, and who desires to qualify as an aerospace engineer may be admitted to the graduate program. In that case the courses leading to the M.A.Sc. or M.Eng. degree will be arranged on an individual basis so that any deficiencies in undergraduate training are made up.

The facilities of the Institute are available for further graduate study and research leading to the Ph.D. degree.

Outline of Lecture and Laboratory Subjects

On the pages that follow a brief description is given of the lectures and laboratory subjects prescribed in the preceding tables of curriculum. The numbers before the subjects are the reference numbers assigned in the tables; the line following each subject title shows the academic year and course to which the subject is offered and the hours allotted to it in each term.

Where laboratory reports are to be written outside of assigned laboratory hours the maximum number of such reports is indicated in the description of the laboratory course concerned.

NON-TECHNICAL ELECTIVES

Each student must include in his annual program a humanities course having a weight equivalent to two hours lectures per week. The humanities courses listed in this calendar (I English 2110, II Economics 2420, III History of Technology and Engineering 2330, IV English 2140 and Philosophy and Science 2040, the latter two being half-courses) are offered expressly for students of this Faculty. The work-load of these courses is commensurate with the time available to engineering students, and the lectures and examinations are scheduled so as to avoid conflict with the engineering program.

Students who wish to have a broader choice of study in the area of the humanities and social sciences may elect, in place of any of the courses mentioned above, appropriate courses offered in the Faculty of Arts and Science. A list of acceptable courses may be obtained from the Secretary of the Faculty of Applied Science and Engineering.

Students who elect a humanities course in the Faculty of Arts and Science should bear in mind that the work load involved is likely to be somewhat heavier than that required by one of the regular humanities courses offered in the Faculty of Applied Science and Engineering. Some courses, especially language courses, have laboratory or tutorial requirements, and most courses involve substantial reading and essay assignments. In some cases, conflicts in the final examinations can not be avoided, and the student may have to write two examinations on a particular day.

INTERDEPARTMENTAL COURSES

11s. INTRODUCTION TO ENGINEERING AND DESIGN

I – 1, 3, 4, 5, 6, 7, 8, 9

This is an elective course which students may take in addition to the regular first-year program. As well as providing an introduction to the engineering approach to problem solving and decision making, using actual engineering problems, the course offers a valuable contact between first-year students and the faculty staff. Students who take the course will receive credit for it, and the results will be included in the computation of the student's average in the work of the year.

After two general lectures on engineering, students will form groups numbering about six and will meet from time to time with a Faculty Supervisor to carry out a design or research project. Topics may be selected from those proposed by students, faculty or industry.

The Professorial Staff in Engineering

13s. MATHEMATICAL APPLICATIONS AND COMPUTER PROGRAMMING

I – 1, 3, 4, 6, 7, 8, 9 ½ 2 ½

Problems will be assigned to illustrate engineering applications of mathematics. Many of the solutions will apply first-year mathematics to solve problems in Applied Mechanics, Chemistry or Electricity. The concepts of algorithms, stored programs and computer coding will be introduced; some of the more time-consuming numerical and non-numerical applications will be solved with the aid of a computer.

The Staff in Engineering

20. PRACTICAL EXPERIENCE

Students in the courses listed below are required to have, before graduation, practical work of a nature acceptable to the department concerned. This may be obtained during the summer vacations but work done before entering the Faculty may also meet the requirements. Instructions will be issued by the departments concerning the type of work which is acceptable. Practical experience certificate forms may be obtained from the departments and should be returned there when completed.

Course 1	600 hours	Course 7	600 hours
Course 3	600 hours	Course 8	600 hours
Course 4	600 hours	Course 9	600 hours
Course 6	600 hours		

40. THESIS

Every student in the Fourth Year is required to prepare a thesis on an approved subject. Instruction will be issued by the department concerned.

In some cases written presentation is required, in other oral and written, or it may consist of a research problem followed by a written thesis or report

EPARTMENT OF CIVIL ENGINEERING

00s. APPLIED MECHANICS

I – 1, 3, 4, 6, 7, 8, 9 — 2 ¾ 2 ¾

atics: The principles of statics are applied to the composition and resolution of rces, moments and couples. The equilibrium states of frames and machines are amined. The distributed load concept is applied to finding centroids, centers of mass d fluid pressure. The method of virtual work is applied to systems of rigid bodies d elastic members. Dynamics: Applications of the principles of dynamics are discussd for motion on straight and curved paths. Work, energy, power and momentum ncepts are applied to particles, systems of particles and rigid bodies. Simpler applitions in relative motion are considered. Throughout statics and dynamics the free dy concept is emphasized and vector algebra is used where it is most useful. Textbok: Vector Mechanics for Engineers – Beer and Johnston.

G. T. Will and Staff in Civil and Mechanical Engineering

01. STATICS

I – 5 — 2 – – –

anslational and rotational resultants and equilibrants are discussed together with uivalent force systems in two- and three-dimensional space. Emphasis is placed on stems in equilibrium. Distributed forces, applications to structures, friction, method virtual work, potential energy and stability of equilibrium considered. Textbook: *gineering Mechanics; Statics* – Huang.

S. M. Uzumeri, M. P. Collins

12. MECHANICS OF MATERIALS

II – 4 — – – 2 –
II – 6 — 2 – 2 –

I this subject, the fundamental theories of stress and strain are investigated as they ply to the selection of adequately proportioned materials to carry a given load in sh engineering applications as tension, compression torsional, and other members. Textbook: *Engineering Mechanics of Deformable Bodies* – Byars and Snyder.

J. D. Barber, V. R. Riley, J. Timusk

13. MECHANICS OF MATERIALS

II – 5 — 2 – – –

Esis relationships between force, stress, strain, and deflection of bodies made of vious engineering materials are discussed. Beams, columns, shafts, tension members al pressure vessels are analysed and designed for strength and stiffness. Textbook: *Mechanics of Materials* – Popov.

E. Karuks

104. MECHANICS OF MATERIALS LABORATORY

II – 3 – 3 –
II – 4 – – – 3
II – 8, III – 9 – – – 1½

An introduction to testing machines, strain and other measuring devices and standard specifications. The experimental study of some engineering materials and structural members under applied load. No laboratory reports will be required to be written outside the assigned teaching hours.

105. ADVANCED STRENGTH OF MATERIALS

IV – 1 (elective) 3 2 – –

To be considered are advanced topics in bending including the analysis of curved and deep beams, analysis of cable systems, columns and beam-columns. In addition the theory of elasticity will be introduced including basic concepts related to plates and shells.

R. A. Collin

106. MECHANICS OF MATERIALS

II – 8, III – 9 2 – 1

The fundamental relations among stress, strain and applied load are worked out for tension, compression, twisting and bending in the elastic and inelastic ranges, for various engineering materials. Buckling phenomena are examined for struts and columns. Numerical applications are done in lectures; and problems are assigned for study. Textbook: *Engineering Mechanics of Deformable Bodies* – Byars and Snyde

A. C. Davidso

107. MECHANICS OF MATERIALS

II – 3 3 – –

In this subject the following are examined: behavior of materials under applied loading or deformation; stress-strain relations; simple tension, compression torsion, bending and buckling of engineering components; mechanical properties of materials such as ductility, yielding, fracture; fluctuating stresses, stress concentration and fatigu Mohr's circle will be used in certain stress and certain strain relationships. Textboo *Engineering Mechanics of Deformable Bodies* – Byars and Snyder.

A. C. Davids

108. ENGINEERING MECHANICS

II – 1 – –

Topics to be considered include rigid body dynamics, energy principles applied statics problems, virtual work, strain energy and an introduction to vibration.

K. A. Sel

09s. ENGINEERING MATERIALS

II – 1 2–2 3

Mechanical properties of materials on atomic as well as macroscopic levels. The topics covered include atomic bonding, structure of crystals, phase transformations and diffusion, mechanical properties of materials and corrosion phenomena. Thermodynamics of adsorptions, freezing mechanisms in porous materials, surface phenomena, colloidal suspensions, gels and pastes, concrete, wood, bituminous materials, polymers, composite materials and the selection of materials for specific applications. The laboratory program deals with materials on a macroscopic level.

J. Timusk and Staff in Materials Science

10. STRENGTH OF MATERIALS

II – 1 3 – – –

An introduction to the elastic and inelastic behaviour of solids under various load conditions. Stress, strain and deformation relations are determined for members loaded axially, in torsion, in bending and compression.

J. D. Barber

11. DESIGN OF STRUCTURES

II – 1 – – 2 2

In this subject the total design process involved in achieving any final structure will be introduced. The application of these procedures to determinate structural systems will be presented through the design of several such structures. The principal engineering materials, reinforced concrete, steel, and timber will be treated.

P. M. Wright

12. DESIGN OF DETERMINATE AND INDETERMINATE STRUCTURES

III – 1 2 2 3 2

A continuation of the subject Design of Structures with emphasis on more complex indeterminate systems.

The analysis of simple indeterminate structural systems is examined. At the same time, design aspects of these systems in reinforced concrete and in steel will be considered.

J. Schwaighofer

14. ADVANCED ENGINEERING MATERIALS

IV – 1 (elective) 3 2 – –

A continuation of Course 109s with an emphasis on the practical design and selection aspects, emphasizing a detailed comparative study of such materials as steel, concrete, timber, masonry materials, bitumens, insulating materials subjected to different types of loading: various temperatures, corrosive environments. Relationship between materials and methods of construction. Laboratory work to complement the above.

R. H. Mills

116. REINFORCED CONCRETE I

IV – 1 (elective) 3 2 – –

Ultimate and working strength behaviour of reinforced concrete members subjected to flexure, axial compression, shear, combined axial compression and flexure, combined flexure and shear, and bond. Relation between research results and current specifications for design of members. Design of simple and continuous beams, one way, two way and flat slabs, columns, retaining walls and footings. Reference books: *Reinforced Concrete Fundamentals* – Ferguson. *Design of Reinforced Concrete Structures* (Seventh Edition) – Winter, Urquhart, O'Rourke, Nilson.

M. P. Collins

117. REINFORCED CONCRETE II

IV – 1 (elective) – – 3

Prestressed Concrete – tension members, simple span and continuous span flexural members, columns and torsion resisting members. Slender reinforced columns.

M. W. Huggin

118. BEHAVIOUR AND DESIGN OF STEEL STRUCTURES

IV – 1 (elective) – – 3

The behaviour of structural elements and structures is discussed and related to desig methods and criteria. Topics include, repeated loading, brittle fracture, welding, con nections, buckling, inelastic behaviour, analysis and design of metal structures b ultimate load procedures. Textbooks: *Structural Steel Design* – Beedle *et al. Canadia Institute of Steel Construction* – Steel Construction Series, Books 1, 2, 3.

119. INDETERMINATE STRUCTURES

IV – 1 (elective) 3 2 –

A further study of indeterminate structures beyond those of course No. 112. Defle tions as well as internal forces, due to various loading conditions, are determine In most cases non-prismatic members are accommodated. Critical buckling loads f various elastic column situations are computed. Arches, frames and space trusses a examined. An elementary form of analysis by matrix organization is studied as elementary plate theory.

R. A. Coll

120. CONSTRUCTION ENGINEERING

III – 1 (elective) IV – 1 (elective) – –

Business and management aspects of construction. Contracts, planning, estimati scheduling, resource levelling, bidding, cost control and labour relations.

Methods and equipment selection and application in heavy construction. Exca tion, tunneling, conveyors, scaffolding, falsework, bracing, formwork, underpinn and underground foundations.

C. Hershfield and Staff in Civil Engineer

32. PUBLIC SPEAKING

IV – 1 ---2

subject emphasizing student participation and designed to develop facility in speaking before a group. Starting with short impromptu talks, the students in small groups move on to longer prepared talks, debating, conducting meetings, introducing and thanking speakers.

H. R. Rice and Staff in Civil Engineering

33. ADMINISTRATION AND MANAGEMENT

IV – 1 2---

Deals with the financing, control, marketing and human relations involved in the operation of a business. The case study method is used and the material in introduced when relevant to the solution of a case.

K. A. Selby, H. L. Macklin

35. ENGINEERING GRAPHICS

I – 1, 3, 4, 5, 6, 7, 8, 9 1 3 1 3

An introductory course designed to give the student a foundation in spatial visualization and an appreciation of the various graphical techniques used in representation and in the solution of engineering problems. The lectures are mainly concerned with descriptive geometry, i.e., with the principles of orthographic, oblique and perspective projection and their use in solving problems involving points, lines and surfaces. In the laboratory, problems are solved in descriptive geometry, engineering drawing, empirical equations, charts and graphs. Both instrument and freehand techniques are used. Textbooks: *Graphic Science* – French and Vierck, 2nd edition; *Graphic Science Problems* – Vierck and Hang, 2nd edition.

C. A. Wrenshall and Staff in Civil Engineering

37. THE ENGINEER AND HIS ENVIRONMENT

II – 1 1 3 1 3

An introduction to the role of the civil engineer in the solution of society's problems. Lectures, seminars and discussion periods by staff of all areas of Civil Engineering and guest speakers. Projects on qualitative solutions to comprehensive engineering problems.

Students work in groups of about 8, and consult staff in Civil Engineering as well as outside agencies.

G. W. Heinke and Staff in Civil Engineering

38. ENGINEERING PRESENTATION

II – 1 1 3 – –

Principles, methods and practice in engineering report writing including methods and procedures of presentation, organization, synopses, nomographs, overlays, drawings

and photographs. Practice in presentation in those data, sketches and mechanic drawings necessary for a draughtsman to produce formal engineering drawings.

H. R. Ric

141. PROBABILITY AND STATISTICS

III – 1 2 – –

Topics to be considered include definition of probability, binomial, poisson and norm distributions, frequency and sampling distributions. Examples of estimation, hyp thesis testing and an introduction to the analysis of variance will be covered.

142. ENGINEERING MATHEMATICS

III – 1 3 2 –

Higher order linear differential equations with constant coefficients, introduction partial differential equations, numerical integration, solution of initial value proble by numerical methods, introduction of finite differences, solution of linear equatio an introduction to the analogue computer.

G. T. W

145. COMPUTER PROGRAMMING

II – 1 2 2

This subject is intended to develop reasonable proficiency in computer programm techniques and to introduce the more elementary numerical analysis procedures. T use of flow charts is emphasized and the Fortran IV language is studied extensiv from a user's point of view. In addition, problem-oriented languages such as CO and STRUDL are introduced.

R. A. Col

153. SURVEYING

II – 1 2 1½ 1

General principles and practice of surveying including: measurement of horizo distances, horizontal angles, vertical distances. Survey calculations, sources of err corrections and adjustments. Route surveying, construction surveying and intro tion to air-photo interpretation and photogrammetry.

B. J. Ha

155. SURVEYING

II – 9 1 –

Introduction to surveying principles and practice. Theory and use of surveying in ments. Survey computations and error analysis, including quantity calculations. T surveys, topographic surveys, and introduction to practical astronomy. Textbo *Surveying Practice* – Kissam; *Surveying for Civil Engineers* – Kissam.

B. J. Ha

6. SURVEYING LABORATORY

II – 9 – 1½ – 1½

First term – field problems using the transit, level and tape. Second term – survey computations related to Course 155.

B. J. Haynes

8. SURVEY CAMP

Course 1, III Year; Aug. 24 to Sept. 11 – Dorset or Gull Lake; Course 9, III Year; August 31 to Sept. 11 – Gull Lake.

Course 1:

(*a*) Adjustments of level and transit, (*b*) Route Surveys, (*c*) Higher Surveys, (*d*) Topographic Surveys, (*e*) Practical Astronomy, (*f*) Photo Interpretation.

Course 9:

(*a*) Topographic Surveying and Mapping, (*b*) Underground Surveying, including Shaft Plumbing and Use of Mine Surveying Instruments, (*c*) Route Surveys, Curve Layout, and Earthwork Quantity Computations, (*d*) Astronomic Observations for Time and Azimuth.

Students in Courses 1 and 9 will be required to take the Survey Camp between the Second and Third Years. Application to defer attendance at the Camp must be made to the Secretary of the Faculty before July 15.

Staff in Civil Engineering

17. ENGINEERING APPLICATIONS OF SURVEYING

III – 1 (elective), IV – 1 (elective) – – 3 2

Theory, methods and instrumentation of engineering surveys. Special applications in Civil Engineering structures such as: bridges, dams, tunnels, highways, airports, powerlines and pipelines, as well as deformation of structures and crustal movement studies. Introduction to hydrographic surveying. Optical tooling and industrial applications.

18. GEODETIC CONTROL SURVEYS

IV – 1 (elective) – – 3 2

The object of Geodetic Control Surveys is to provide a basis for the design and analysis of urban and regional surveys. The following topics are studied: the establishment of vertical horizontal datums and their relation to municipal and national mapping, the reduction of field measurements to a datum surface, a study of electromagnetic survey systems and propagation problems, some elements of physical and

geometric geodesy, the relation between astronomic and geodetic coordinates and their determinations, the adjustment and statistical analysis of survey measurements with the application of the electronic computer.

R. C. Gunn

170. PHOTOGRAMMETRY AND REMOTE SENSING

IV – 1 (elective) 3 2 –

Ordinary camera as a measuring instrument. Cameras for precise work. Materials and execution of ground and aerial photography. Simple geometry of the photograph. Binocular vision and stereoscopic observation. Simple measurements from stereo pairs of photographs. Methods and means of reconstruction of an exact 3-dimensional model of the photographed object. Applications in various fields such as surveying, mapping, engineering, forestry, architecture, geography, etc. Characteristics of electromagnetic spectrum and the basis for remote reconnaisance. Elementary discussion of laws governing absorption, reflection, emission and scattering of radiant energy. Spectral characteristics of natural objects and means of their detection. Examples of remote sensing in natural resource studies. Discussion of earth resource satellites, their orbits, equipment, data recovery. Examples of returns as they become available.

180. ENVIRONMENTAL ENGINEERING

II – 1 – – 2

This subject introduces problems related to the source and fate of air, water and soil pollutants and their effect on society. The control of pollution by prevention and disposal is discussed.

A. P. Bernhart, P. H. Jon

182. MUNICIPAL ENGINEERING

III – 1 – – 2

Quantities of water and waste water, hydrology, waste water collection systems, water distribution systems, municipal roads, refuse disposal, administration and financing of municipal works. Laboratory: Design Problems supplementing lecture material. Text book: *Water and Waste Water Engineering* – Fair, Geyer and Okun, Volume I.

G. W. Heinke, G. K. Rodge

183. POLLUTION CONTROL ENGINEERING

IV – 1 (elective) 3 2

Air pollution control, water supply and purification, municipal waste water treatment, industrial waste water treatment, soil pollution control.

A. P. Bernhart, K. Reich

15. TRANSPORTATION SYSTEMS

III – 1 3 2 – –

Function of transportation, national and urban transportation policy issues, characteristics of transportation systems, principles of location, geometric design of highways and railways, planning procedures.

G. N. Steuart

17. TRAFFIC ENGINEERING

IV – 1 (elective) 3 2 – –

Urban transportation planning, traffic studies, forecasting models, characteristics of traffic flow, traffic control at intersections, methods of project evaluation. Textbook: *Traffic Engineering Handbook*. References: *Principles and Techniques for Predicting Future Demand for Urban Area Transportation* – Martin, Memmott, and Bone; *Highway Capacity Manual.*

R. G. Rice

18. TRANSPORTATION ENGINEERING

IV – 1 (elective) – – 3 2

Characteristics of Transportation Systems, Railway and Airport Engineering, Theory of Traffic Flow, Behaviour and Design of Flexible and Rigid Pavements. Reference books: *Introduction to Transportation Engineering* – Hay; *Planning & Design of Airports* – Horonjeff; *Soil Mechanics for Road Engineers* – D.S.I.R.; *Principles of Pavement Design* – Yoder; *Poisson & Traffic* – Eno Foundation.

19. AIR PHOTO INTERPRETATION

III – 9, IV – 1 (elective 3 2 – –

The principles of interpretation of aerial photographs; processes of formation, drainage, and erosion of landforms, both unconsolidated and consolidated with particular emphasis on glaciation; terrain patterns as seen on aerial photographs, their identification and evaluation, and the engineering problems involved; location of granular materials, soil mapping; location of surface and groundwater supplies; investigations from airphotos for highway, powerline, and pipeline locations, damsites, flood control structures and shoreline structures; classification of organic terrain and prediction of depth; arctic and subarctic terrain interpretation and problems; existing land use classification; land capability for various uses; site selection and planning; summary and potential engineering applications of colour, infrared colour, infrared and radar imagery. The course will concentrate on the recognition of general and particular engineering problems or benefit and total environmental conditions from existing aerial black and white photographs. There will be a one-day field trip in early November to verify specific interpreted information.

S. J. G. Bird

191. SOIL MECHANICS AND FOUNDATIONS

III – 1, IV – 9 2 1½ 2 1½

Identification and classification of soils for engineering purposes, weight-volume relationships, compaction, permeability and drainage characteristics, effective stresses, settlement, shearing strength, site exploration and soil sampling. Bearing capacity, footings, consolidation and settlement, lateral pressure, retaining walls, braced cuts and cofferdams, pile and caisson foundations, sheet pile bulkheads, slope stability, flow nets, dewatering. In addition to lectures there will be laboratory testing and problem periods.

E. Robinsky

193. FOUNDATIONS AND EARTHWORKS

IV – 1 (elective) – – 3

Design and construction of: Foundations for buildings, bridges and other structures including excavation, footings, piling, caissons; Retaining walls, sheet pile bulkheads tunnels; Fills, embankments, earth-fill and rock-fill dams including seepage, dewatering and grouting. Geotechnical processes and field measurements and control.

E. Robinsky

194s. ENGINEERING GEOLOGY

IV – 1 (elective) – –

The study of engineering practice from a geological point of view. The behaviour of rocks and soils in building and engineering construction, foundations, tunnels, dams and flood-control works with reference to the importance of the mineral composition of earth and rock materials, their geomorphic and geologic features and their structural history. Engineering case studies will include examination of groundwater, frost action, landslide conditions, shoreline engineering, construction in permafrost, earthquake problems, and field investigations.

A. K. F. Turn

195. MINING

II – 9 1 –

A combined lecture and laboratory subject in the principles of mining and its unit processes. Emphasis is placed on the statistical approach to sampling calculations.

H. R. F

196. MINING TECHNOLOGY AND MINERAL DRESSING

III – 9 2 –

An introduction to mining practice with emphasis on current mining methods as applied to geological situations and stress environments; current practices in mineral beneficiation processes.

H. R. I

37. MINE OPERATION AND ADMINISTRATION

IV – 9 2 – 2 –

Mine operation with special attention paid to mine services; administration dealing with aspects of economics, industrial engineering, finance, and industrial relations.

H. R. Rice

38. MINING LABORATORY

IV – 9 – 3 – 3

Problems in mine layout involving shaft location and size; mine development; choice of stoping methods, mining rate, and mine equipment; time and cost schedules; ore reserve calculations.

DEPARTMENT OF MECHANICAL ENGINEERING

33. STATISTICAL THERMODYNAMICS

III 5nt – – 2 –

A development of thermodynamics in which the ensemble approach is used to treat isolated, closed and open systems; to include such topics as the Liouville theorem, statistical equilibrium, partition functions, specific heats, and fluctuations in thermodynamic properties.

34. HEAT ENGINEERING

III – 3 – – 3 2

Applications of thermodynamics to machines, including: background to the development of heat engines; basic steam power plant cycles and design; internal combustion engines and cycles; combustion calculations; fuel and exhaust products analysis; power plant testing; heat transmission; psychrometry and air conditioning.

A. B. Allan

39. ENGINEERING THERMODYNAMICS

III – 3 2 – 2 –

Fundamentals of the effects of heat on fluids, including: first and second laws of thermodynamics; ideal processes using gases and vapours; reversibility, availability and entropy; properties of real and ideal fluids; processes and cycles for gas and vapour power plants; processes and cycles for refrigeration.

F. C. Hooper

310. HEAT ENGINEERING LABORATORY I

III – 3 – 3 – 3

Complementary to lecture subjects 308 and 309. The experimental work, conducted on a broad range of heat and power equipment, is intended to offer experience in the design, organization and execution of experimental investigations of thermal apparatus, in the application and evaluation of the associated instrumentation, in the treatment of the data, and in the interpretation and reporting of the work. Textbook: *The Engineering Report in the Undergraduate Laboratory* – Hughes.

313. HEAT ENGINEERING

III – 5nt 1 3 1

This course consists of a study of the fundamental concepts of macroscopic thermodynamics, and their applications to closed and open dynamic systems. An examination of the principal power cycles is undertaken in relation to the properties of the working media involved. Emphasis is placed on a thorough understanding of the three basic laws of thermodynamics. Textbook: *Concepts of Thermodynamics* – Obert. Reference books: *Engineering Thermodynamics* – Hall and Ibele. *Thermodynamics* – Van Wylen

C. A. War

319. HEAT TRANSFER

IV – 3 2 1½ 2 1

Fundamentals of heat transfer with practical application, steady state conduction, natural and forced convection for laminar and turbulent flows, radiation heat transfer, transient systems, combined heat transfer processes, introduction to mass transfer, practical applications, heat exchangers. Textbook: *Principles of Heat Transfer* – *F. Kreith.*

A. H. Abdelmessi

322. MICROSCOPIC THERMODYNAMICS

IV – (elective) 2 – 2

Elementary kinetic theory concepts such as collision frequency, distribution functions, transport phenomenon, thermodynamic properties, phase space and the Boltzmann equation; classical statistical mechanics concepts of ensembles, partition functions and their use; introduction to quantum mechanics; the quantum statistical mechanics of Bose-Einstein and Fermi-Dirac systems, translational, rotational, vibrational, electronic, nuclear partition functions; other related topics. Textbook: *Microscopic Thermodynamics* – Pierce.

C. A. W

323. THERMAL POWER GENERATION

IV – 3 (elective) 2 – 2

Plants and processes in major production, overall design and heat balance in steam plants, non-central power production, characteristics of portable power units, fossil fuels and nuclear energy, combustion theory and introduction to combustion pr-

ems, principles and potential of new devices currently under development, magneto-ydrodynamics power, fuel cells, thermionic and thermoelectric power.

P. B. Hughes

28. HEAT TRANSFER

IV – 5nt – – 2 –

teady state and transient conduction, surface and gas radiation, convection, boiling, ondensation and combined mechanisms are considered. Special attention is given to nalogue and computational procedures and to consideration of the manner in which ovel or complex problems may be approached. Textbook: *Heat Transmission* – IcAdams.

F. C. Hooper

31. THERMAL ENERGY CONVERSION

IV – 5nt 3 3 3 3

he thermodynamics and gas dynamics of thermal energy conversion. Steam power ycles, nuclear reactor and fossil fuel energy sources, magnetohydrodynamics power eneration, fuel cells, combustion, refrigeration, new trends and research developments.

D. S. Scott

33. FLUID MECHANICS AND HYDRAULICS

III – 1 2 – 2 3

roperties of fluids, fluid statics, pipe-line flows, compressible flows, momentum and nergy equations, dimensional analysis, free surface flows, flow around submerged odies, turbulent flows, pumps, water hammer and surge tanks.

D. F. James

34. FLUID MECHANICS I

III – 3 2 – 2 3

troductory concepts; fluid properties, dimensional analysis; hydrostatics; kinema-cs and dynamics of flow; irrotational flow and vorticity; dynamic lift; laminar flow; rbulent flow; applications to closed-conduit and open-channel flow; one-dimensional ompressible flow.

G. R. Lord

37. FLUID MECHANICS AND THERMODYNAMICS

III – 4 – – 2 3

uid properties and equation of state, momentum and energy equations; dynamics of ow, laminar and turbulent flow, closed-conduit flow.

Laws of thermodynamics, the Carnot cycle, real and ideal fluids, power cycles, ychrometry and heat transfer.

D. F. James, F. C. Hooper

38. FLUID MECHANICS

III – 5C 2 3 – –

esentation of fundamentals of continuum fluid motion; introductory concepts; kine-atics and dynamics of flow; irrotational motion; viscous laminar and turbulent flow; ermodynamic relationships; gravity effects; applications.

J. F. Keffer

339. FLUID MECHANICS

III – 6 2 3 – –

Introductory concepts; fluid properties; fluid statics; kinematics and dynamics of flow; laminar and turbulent flow; closed-conduit and open-channel flow; compressibility effects; drag and lift on submerged bodies; elementary turbomachinery.

J. F. Keffer

340. FLUID MECHANICS

III – 5nt 2 3 2 3

A fundamental approach to the mechanics of fluid motion; continuum concepts; kinematics and dynamics of flow; irrotational motion; vorticity; laminar flow solutions; turbulent motions; applications to conduit flow; thermodynamic relationships; elementary thermal transport; free surface waves; fluid machinery.

J. F. Keffer

341. FLUID FLOW AND HEAT TRANSFER

III – 8 2 – 2 3

A study of the forces and motion produced by various fluid properties. Gravitational, viscous and inertial forces are considered in detail. Momentum, energy and continuity relation, boundary-layer approximation, turbulence, flow in pipes and around submerged bodies. Steady-state conduction in one dimension; extended surfaces; heat conduction with two or more independent variables; forced convection and dimensional analysis; heat transfer by free convection; radiant heat transfer; heat transfer by combined conduction and convection; heat transfer in liquid metals.

A. H. Abdelmessih, H. J. Leutheusser

343s. HYDRAULIC ENGINEERING

IV – 1 (elective) – – 3

Review of the flow principles in a fluid. Field measurements of groundwater flows and flows into wells. Open channel and closed conduit flow. Hydraulic structures and appurtenances, transitions controls; dams; navigation works, methods of construction. Hydraulic machinery, pumps, turbines, power and control systems. Design and testing of hydraulic engineering systems; analytical procedures, numerical methods and computer simulation. Systems analysis.

L. E. Jon

344. APPLIED FLUID MECHANICS

IV – 3 2 1½ 2 1

Pipe, networks; one dimensional gas dynamics including simple area change, simple friction, simple heating, generalized flow and normal shock waves; hydraulic transients including surges and water hammer; flow machines; fluid power circuits; other topics of engineering significance.

Problems and experiments in applied fluid mechanics.

H. J. Leutheus

345s. WATER RESOURCES AND HYDROLOGY

IV – 1 (elective) 3 2 – –

Management of water as a resource for optimal use. Qualitative and quantitative evaluation of surface and ground water sources. Natural and artificial recharge mechanisms. Multiple purpose impoundments for drainage, flood control, irrigation and water supply. Natural and man-made upsets in ecological systems resulting in impairment of natural water sources. Rainfall, runoff, streamflow, measurements, predictions and mathematical models.

Staff in Civil and Mechanical Engineering

346. FLUID MECHANICS II

IV – 3 (elective) 2 – 2 1½

Flow of an ideal fluid, complex variable analysis, lift, finite wing theory, viscous fluid flow, simple solutions of Navier-Stokes equations, lubrication theory, boundary-layer theory, drag of streamline bodies, turbulent flow, diffusion in turbulence, dynamics of submerged bodies, introduction to aeroelasticity, free surface phenomena.

J. F. Keffer

351. DYNAMICS

II – 3 3 1½ – –

Calculus of vectors; particle motion; systems of particles; rigid bodies; virtual work and D'Alembert's principle; introduction to Lagrange equations; introduction to mechanical vibrations.

R. C. Flanagan

352. DYNAMICS

II – 7 3 2 – –

Dimensional units; vectors; kinematics, rectilinear and angular motion, plane motion, projectiles; satellite orbits, rigid body concept, relative motion with respect to translating and to rotating vehicles; kinetics, force, d'Alembert's principle, rotation, translation, vibration of mechanical and electrical systems, work, energy, conservation of energy, power, impulse, momentum, rockets, jets, fluid mechanics, impact, balancing, centrifugal and Coriolis' force, critical speeds, gyroscopic effect. Reference book: *Vector Mechanics for Engineers – Dynamics* – Beer and Johnston.

D. McCammond

356. DESIGN OF MACHINE ELEMENTS

II – 3 – – 2 3

Course 3, II Year; 2 hrs. lectures per week, second term. Standard methods for the design of belts, shafts, spur gears, bearings, brakes, clutches, couplings, power screws, fasteners, rivets and welded components. Textbook: *Mechanical Engineering Design* – Shigley.

D. McCammond

358. THEORY OF MACHINES

II – 3 – – 2 3

Equations for accelerated motion of mass applied to the analysis of machine elements. Velocity, acceleration, force distribution, speed fluctuation and balancing of machine parts and machines. Cams, gears, flywheels and linkage kinematics. Textbook: *Kinematics and Dynamics of Machinery* – Maxwell.

G. E. Godfrey

360. SYSTEMS DYNAMICS

III – 3 1 – 1 –

Setting up of the differential equations of physical systems; frequency response and bandwith concepts; the analogue computer; transducers and instrumentation; frequency response and transient response, consideration in the matching of processes.

D. L. Allen

361. VIBRATIONS

III – 3 2 – – –

Single-degree-of-freedom systems, damped and undamped; multi-degree-of-freedom systems; method of determining natural frequencies; characterization of physical systems by mathematical models; response of such systems to steady-state single-frequency excitation and to transient pulses; beams and strings.

B. Tabarrok

362. DYNAMIC MEASUREMENTS LABORATORY

III – 3 – 3 – 3

A combined laboratory course for Vibrations (361) and Systems Dynamics (360). Includes: comparative experiments with transducers; analogue computer study of transient and frequency response behaviour of physical systems; vibration experiments; experimental study of electrical-mechanical-fluid-thermal analogies; measurements of the process dynamics of a variety of systems, including consideration of the optimum choice of transducers and instrumentation and the comparison of transient and frequency response.

363. ENGINEERING DESIGN

III – 3 – – 2 –

Approach to engineering design; problem definition; generating and comparing concepts; synthesis-analysis-evaluation decisions under realistic situations. Engineering examples and small design projects utilizing available background of mathematics, mechanics, circuits and thermodynamics. Specific attention is given to such subjects as springs, curved beams and experimental stress analysis.

I. W. Smith

364. ENGINEERING DESIGN LABORATORY

III – 3 – – –

A laboratory course complementary to the lectures of subject 363, Engineering Design

365. EXPERIMENTAL STRESS ANALYSIS

III – 5nt, 5p 2 – 1 3

The elementary concepts of the theory of elasticity will be given. The experimental techniques of measuring stress or strain will be studied; these techniques include strain-gauge, photoelastic, brittle-coating and moire methods.

G. E. Godfrey

367. APPLIED MECHANICS

IV – 3 2 1½ 2 1½

Beams on elastic foundations, energy methods, torsion of non-circular cylinders and open sections, thick discs, composite cylinders, equations of two-dimensional elasticity, description of continuous media. Review of particle dynamics, Lagrange's equations, Hamilton's principle, gyroscopic dynamics, non-linear vibrations, phase plane, vibrations of continuous elastic media, rocket dynamics, outer space dynamics.

R. C. Flanagan, B. Tabarrok

374. MANUFACTURING SCIENCE

IV – 3 (elective) 2 – – –

Review of traditional production processes including casting, forging, cutting, etc.; science of metal removal; economics of production; sintering, EDM, ECM, explosive forming, etc.; numerical control and automation. Textbooks: *Processes and Materials of Manufacture* – Lindberg; *Manufacturing Analysis* – Cook.

R. G. Fenton

375. DESIGN METHODOLOGY

IV – 3 (elective) – – 2 1½

Morphology of design decision making; computer-aided graphic and design methods, optimization, reliability, value engineering.

R. G. Fenton

380. DIFFERENTIAL EQUATIONS

II – 3 – – 2 –

Engineering applications of elementary differential equations, to include such topics as operational methods, elementary nonlinear equations, simultaneous differential equations.

Staff in Mechanical Engineering

386. ENGINEERING MATHEMATICS I

III – 3 3 1 – –

Analytical techniques used in mechanical engineering, including such topics as ordinary differential equations, Laplace transform, numerical solution of ordinary dif-

ferential equations, series, series solution of differential equations, Bessel functions, Legendre functions, Boundary and initial value problems.

W. D. Baines

387. ENGINEERING MATHEMATICS II

III – 3 – – 3 1

Continuation of subject 386 including Fourier series, Fourier-Bessel series, Legendre series, Vector analysis, line and surface integrals, transformation of co-ordinate systems, solution of partial differential equations by separation of variables, simple problems in heat conduction, vibration of strings and membrances, analytic functions of a complex variable.

W. D. Baines

390. ENGINEERING MATHEMATICS II

IV – 3 (elective) 2 – 2 1½

Partial differential equations in engineering including such topics as Fourier series and integrals, integral transforms, classification of partial differential equations, solutions of the Laplace, diffusion and wave equations.

I. G. Currie

391. CONTROL SYSTEMS

IV – 3 2– 2 –

Analysis and synthesis of linear feedback control systems, by frequency response methods and the s-plane approach; application to some common systems for the control of industrial machinery and processes; introduction to non-linear, to sampled-data and to digital control systems.

J. VandeVegte

392. CONTROL SYSTEMS LABORATORY

IV – 3 – 1½ – 1½

Problems and experiments designed to accompany lecture course 391.

394. CONTROL ENGINEERING

III – 4 – – 2 ?

An introduction to the dynamic behaviour of linear systems; the feedback principle stability of linear control systems; the convolution theorem; transfer functions o linear systems; analysis of linear control systems; introduction to servo-mechanism technology. Problems and laboratory experiments will accompany the lectures.

J. S. Ansar

398. CONTROL SYSTEMS

IV – 5a, 5g, 5nt 2 – 1

Linear control systems by the transfer function technique and the state space approach. Elementary nonlinear control systems. Introduction to sampled-data and t digital control systems. Introduction to optimal control.

J. VandeVegt

399. CONTROL SYSTEMS LABORATORY

IV – 5a, 5g, 5nt – – – 3

A laboratory course accompanying subject 398.

DEPARTMENT OF INDUSTRIAL ENGINEERING

414. ELEMENTS OF INDUSTRIAL ENGINEERING

II – 4 2 – 2 –

A broad survey of both old and new elements of Industrial Engineering, with selected reading and essay assignments, including work study, wage determination, controls of production, quality and cost, mathematical models of production and distribution systems, computer simulation techniques, operational research, human factors studies, and management science.

B. Bernholtz, J. Vanderheyden

415. CONTROL OF PROCESSES

IV – 4 2 1½ 2 1½

Short Survey of Systems Engineering. Goals and Decisions: Philosophical Issues of Value Judgements. Physical and Economic Models: System Analysis. Linear and Geometric Programming. State Space Representation of Linear and Nonlinear Systems. Solution of State Space Equations. Stability, Controllability and Observability. Sampled-Data Systems. Steady-State Process Optimization: Well-Defined Processes, Adaptive Control, Evolutionary Optimization. Dynamic Process Optimization: Calculus of Variations, The Maximum Principle, Dynamic Programming. Computer Process Control. Business, Engineering and Economic Applications.

J. M. Tusiewicz

418. MANAGEMENT SCIENCE

IV – 4 2 1½ 2 1½

The course presents the basic principles of decision making. It includes such concepts as the expression of individual choice by indifference curves, the analysis of data by Bayesian inference, the value of accurate information, and the use of cardinal utility to represent aversion to risk. The concepts are illustrated with industrial applications.

T. A. Lambe

421. THESIS PROJECT

IV – 4 – 3 – 3

Design and analysis of an engineering system to satisfy certain objectives and requirements (e.g. the production of a specific product). This project will provide the student with an opportunity to apply the knowledge and techniques of analysis acquired in all the other Industrial Engineering subjects. The work will be carried out under the supervision of staff members. Progress reports and a written thesis are required.

Staff in Industrial Engineering

422. COMPUTERS AND PROGRAMMING I

II – 4 22– –

Coding and programming for the digital computer; machine organization, machine language and symbolic compiler language (FORTRAN IV); number representation and conversion. Laboratory exercises are drawn from the fields of engineering and applied science, as well as from those of data processing and elementary compilation.

R. W. P. Anderson

423. COMPUTERS AND PROGRAMMING II

III – 4 22– –

An extension of the Second Year subject Computers and Programming I. More advanced discussion of general and specialized compiler languages and their application in business, engineering and other fields; simulation, data processing, and list processor languages; Monte Carlo methods; GPSS, SIMSCRIPT, COBOL, etc. Laboratory problems are selected to complement the lecture material.

R. W. P. Anderson, S. H. Cohn

424. OPERATIONAL RESEARCH I

III – 4 2 2 2 2

The course provides an introduction to the methodology, techniques and applications of Operational Research. The processes of model building and solution are illustrated, throughout the course, using simplified case studies. These studies will include examples of decision problems of inventory, replacement and reliability, allocation, queueing, competition, sequencing and co-ordination. The course will also include introductions to the mathematical techniques of linear and integer programming, dynamic programming, branch and bound methods, simulation, CPM – PERT, and Markov processes.

A. A. Cunninghan

425. MAN AS AN INFORMATION PROCESSOR

IV – 4 – –2–

The design of equipment and systems of equipment for effective use by human beings

P. J. Fole

426. DIFFERENTIAL PSYCHOLOGY

IV – 4 2– –

The study of individual differences in intelligence, achievement, aptitude and personality, as well as differences related to sex, age, racial and cultural factors. Problem and methods of psychological measurement.

J. L. Vital

427. MAN AS A MACHINE

IV – 4 2– –

Detailed study of the biological bases and correlates of behaviour with emphasis on th analysis of sensory systems.

P. J. Fole

428. ORGANIZATIONAL PSYCHOLOGY

IV – 4 – – 2 –

Individual and group behaviour in work organizations. Relevance to human behaviour and management problems, supervision, communications, motivation and the implementation of change.

E. L. Vitalis

429. SYSTEM SIMULATION

IV – 4 2 1½ – –

Computer simulation models. The theory will be developed and applied to problems in the design and analysis of queueing, inventory, maintenance, reliability, transportation, and resource allocation systems.

I. B. Turksen

430. INFORMATION AND OPTIMIZATION

IV – 4 – – 2 1½

Introduction to information theory; topics in optimization theory.

J. G. C. Templeton

DEPARTMENT OF CHEMICAL ENGINEERING AND APPLIED CHEMISTRY

600. CHEMISTRY

I – 1, 3, 4, 6, 7, 8, 9 2 – 2 –

Chemical theory, with industrial and engineering applications.

The Staff in Chemical Engineering

601. CHEMICAL LABORATORY

I – 1, 3, 4, 5, 6, 7, 8, 9 – 3 – 3

A laboratory course illustrating the fundamental laws of chemistry as dealt with in the lecture course, and providing an introduction to chemical analytical methods.

W. F. Graydon, M. J. Phillips, S. Sandler, A. M. Rozeiu

602. CHEMISTRY

I – 5 2 – 2 –

Introductory physical chemistry: the gas laws, chemical equilibria, elementary solution chemistry, thermochemistry. Problems dealing with industrial and engineering applications.

W. H. Burgess

608. PHYSICAL CHEMISTRY

II – 5 2 – 2 –

The themes discussed are conservation, equilibrium and rate of change in chemical systems. These are applied to topics in thermo-chemistry, phase equilibrium, reaction equilibrium, including reactions in cells, and reaction kinetics. Reference books:

Physical Chemistry, by F. Daniels and R. A. Alberty, 3rd ed.; *Physical Chemistry*, by W. J. Moore, 3rd ed.

C. E. Chaffey

609. PHYSICAL CHEMISTRY LABORATORY

II – 5 – 1½ – 1½

Experimental work and problems periods to accompany subject 608. In the second term, each student performs a laboratory investigation of an individual problem of a research type. Alternate periods are devoted to solving assigned problems.

C. E. Chaffey

613. ANALYTICAL CHEMISTRY

II – 6

This course commences on Tuesday, September 1, and continues until the opening of the Fall Term. All the working time will be spent on systematic qualitative inorganic analysis. Textbook: *Quantitative Chemical Analysis* – Fischer and Peters.

J. W. Smith, W. A. M. Hewer, J. Binkiewicz, M. J. Phillips

614. ANALYTICAL CHEMISTRY LABORATORY

II – 6 – 9 – –

A continuation of subject 613.

J. W. Smith, W. A. M. Hewer, J. Binkiewicz, M. J. Phillips

615. ANALYTICAL CHEMISTRY

II – 6 2 – – –

Equilibrium considerations in quantitative analysis. Textbook: *Solubility and pH Calculations* – Butler.

J. W. Smith

617. INORGANIC CHEMISTRY

II – 6, 8, 9 1 – 2 –

Review of periodic classification. Modern atomic structure, elements of nuclear theory. Fundamental properties of elements. Chemical bonding in molecules. Solid state theory and solid structures. Descriptive chemistry of selected elements.

R. E. Jervis

619. CHEMICAL ENGINEERING SCIENCE LABORATORY

II – 6 – – – 7½

Experiments illustrating the kinetic and equilibrium principles of chemical engineering. Mass and heat balance calculations. One laboratory report per week.

I. H. Spinner, W. A. M. Hewer, C. P. Brockett, M. J. Phillip

620. PROCESS CALCULATIONS

II – 6 – 3 –

Process calculations in chemical engineering. Textbook: *Basic Principles and Calcu*

ations in Chemical Engineering – Himmelblau.

J. W. Smith, I. H. Spinner

522. PHYSICAL CHEMISTRY

II – 6 2 – 2 –

The themes discussed are conservation, equilibrium and dynamics in chemical systems. These are applied to topics in thermochemistry, phase equilibrium, reaction equilibrium, including reactions in cells, surface phenomena and reaction kinetics. Reference books: *Physical Chemistry* – F. Daniels and R. A. Alberty, 3rd ed.; *Physical Chemistry* – W. J. Moore, 3rd ed.

R. W. Missen

525. REACTION KINETICS

III – 6 1 – 1 –

Chemical kinetics; principles of adsorption and colloid chemistry.

W. H. Burgess

526. SYNTHETIC CHEMISTRY

III – 5c 1 – 1 –

A course in synthetic chemistry covering the principles of systematic organic chemistry and systematic inorganic chemistry.

R. Woodhams

527. CHEMICAL LABORATORY

III – 6 – 6 – 6

A laboratory course to accompany subject 640. One laboratory report.

W. F. Graydon, Z. May

528. ORGANIC CHEMISTRY

III – 6 2 – 2 –

An introductory course in organic chemistry, with emphasis on structure.

J. G. Breckenridge

529. ORGANIC CHEMISTRY LABORATORY

III – 6 – 6 – 9

A laboratory course accompanying subject 628.

W. H. Rapson, Z. May

530. INDUSTRIAL CHEMISTRY

III – 6 2 – 1 –

Selected topics in the chemical process industries. The course illustrates how the principles of chemistry, engineering and economics are applied in industry. Textbook: *Chemical Process Industries* – R. N. Shreve.

Staff in Chemical Engineering

531. INTRODUCTION TO MASS AND HEAT TRANSFER

II – 6 2 – 2 –

The fundamental theory and practice used in transfer operations in chemical engineer-

ing. Energy and mass transfer are considered in the study of the flow of fluids, fluidi zation of solids, heat transfer, and evaporation of solutions. Textbook: *Principles o Unit Operations* – Foust *et al.*

W. G. MacElhinney

632. FLUID MECHANICS

III – 6 – – 2

Applications of the fundamentals of fluid mechanics in chemical engineering, with emphasis on single- and two-phase flow with and without heat transfer, fluid-particle dynamics and non-Newtonian fluid flow.

M. E. Charle

633. APPLIED MATHEMATICS IN CHEMICAL ENGINEERING

III – 6 1 1 1

The first term is devoted to analysis and solution of chemical engineering problem which require knowledge of the rational design of experiments, treatment of experimental data and tests of hypotheses. The second term is devoted to applications o differential equations to problems of chemical engineering interest; emphasis is on th formulation of differential equations, together with their solution by analytical an numerical methods. Reference Books: *Probability and Statistics for Engineers* - I. Miller and J. E. Freund. *Engineering Statistics* – A. H. Bowker and G. J. Lieberman. *Applied Differential Equations* – M. R. Spiegel.

I. H. Spinner, R. Luu

634. CHEMICAL BONDING, PROPERTIES AND REACTIVITY

III – 5m 2 – 2

The compounds of the principal elements and their physical and chemical properties are discussed. Tools ranging from classical concepts and equations to Quantum Mechanics are used to understand, predict and classify this information.

R. E. Jervi

640. CHEMICAL ENGINEERING THERMODYNAMICS

III – 5c 2 – 2
III – 6 2 2 2

A tutorial course in classical thermodynamics with problems in the field of applie chemistry and chemical engineering. Special emphasis is placed on chemical processe and compositional changes.

W. F. Graydo

641. CHEMICAL ENGINEERING RATE PROCESSES

III – 5c – – 3

Introduction to mass, momentum and energy transport. Kinetic theory of gases, ca culation of transport properties; analytical solutions of problems in viscous flow, hea conduction and mass diffusion; turbulent transfer coefficients; applications to chemica engineering systems. Textbook: *Transport Phenomena* – Bird, Stewart and Lightfoo

O. Tra

42. CHEMICAL ENGINEERING PROBLEMS AND LABORATORY

III – 5c – 9 – 7½

roblems and laboratory experiments illustrating topics discussed in subjects 640, 41, and 626.

Staff in Chemical Engineering

50. MASS TRANSFER OPERATIONS

III – 6 2 1 2 1

IV – 5c 2 – 2 –

he theory and practice of mass transfer operations in chemical engineering are dis- ussed. Many problems in distillation, extraction, absorption, and other operations ustrate the course. Textbook: *Mass Transfer Operations* – 2nd Ed. R. E. Treybal.

D. Mackay, O. Trass

51. CHEMICAL PLANT DESIGN

IV – 6 (elective) 2 3 – –

he lectures take a systems approach to the design of chemical plant, proceeding om the origin through major design considerations to technical and economic feasi- ility. Considerations applying to overseas situations, and the relationship of design to peration are included. In the plant design laboratory teams of students design and valuate a particular plant. Textbook: *Plant Design & Economics for Chemical ngineers* – Peters & Timmerhaus. Reference book: *Fundamentals of Cost Engineer- ig in the Chemical Industry* – Bauman.

M. Wayman, D. Mackay

52. CHEMICAL ENGINEERING LABORATORY

IV – 5c, 6 – 9 – –

laboratory course to accompany subjects 631, 632, 650, and 651. Bench and pilot ant experiments are carried out to study a variety of unit operations such as fluidi- ation, heat transfer, evaporation, filtration, distillation, extraction, and absorption. odern control instruments are discussed and operated. One laboratory report per eek.

R. F. Hunter and Staff in Chemical Engineering

53. PROCESS MODELLING AND SIMULATION

IV – 6 (elective) 2 3 – –

he mathematical modelling of steady and unsteady states in typical processes involv- ig fluid flow, heat and mass transfer, vapour-liquid equilibria, and chemical reaction. olution by analytical, analogue, and digital methods. Introduction to controller re- ponse modes.

D. Basmadjian, M. E. Charles, I. H. Spinner

65. CHEMICAL ENGINEERING THERMODYNAMICS

IV – 6 (elective) 2 – – –

continuation of Course 640. Special emphasis is placed on the properties of real ases and of solutions of non-electrolytes, and on chemical equilibria.

W. H. Burgess

656. PUBLIC SPEAKING

IV – 6 – – 2 –

Staff in Chemical Engineering

660. SELECTED TOPICS IN ORGANIC CHEMISTRY

IV – 5o 2 – 1 –

A short course in the preparation, structure, and reactions of carbohydrates, proteins, heterocyclic compounds, chemotherapeutic agents, steroid hormones, alkaloids, and synthetic organic polymers.

P. Y-C Wang

661. ORGANIC CHEMISTRY LABORATORY

IV – 5c – – – 6

A laboratory course to accompany subject 660.

Z. May

662. PROCESS CONTROL

IV – 6 (elective) – – 2 –

Fundamentals to optimal control of engineering systems are developed from the state-space viewpoint. The use of dynamic programming, maximum principle, and other optimization procedures is established and illustrated for both the continuous and discrete time systems. Non-linear analysis is introduced by approximate analytic methods, phase-space representation and the application of some elementary principles of asymptotology. Textbook: *Optimal Control of Engineering Processes* – Lapidus and Luus.

R. Luus

663. INSTRUMENTAL METHODS

IV – 6 (elective) – – 2 –

The subject is designed to emphasize the science of chemical instrumentation. The principles, technique, and applications of gas-chromatographic, opticometric, electrometric, and mass-spectrometric methods of analysis are studied.

S. Sandler

664. PROCESS DYNAMICS

IV – 5o 2 – 2 3

Analysis and control of chemical engineering systems with emphasis on non-linear methods; phase plane; Liapunov's method; averaging technique. Introduction to optimal control of processes; extraction train, distillation column, and chemical reactors

R. Luus

665. THERMODYNAMICS OF CHEMICAL SYSTEMS

IV – 5o 3 – – 1

Development of the principles of chemical equilibrium and of statistical mechanics application to both non-reacting and reacting systems, with emphasis on behaviour o multicomponent mixtures and complex reactions, and the calculation of thermodyna

nic properties in the ideal-gas state. Reference books: *The Principles of Chemical Equilibrium*, by K. G. Denbigh; *Molecular Thermodynamics of Fluid Phase Equilibria* J. M. Prausnitz.

R. W. Missen

666. CHEMICAL ENGINEERING DESIGN

IV – 5c 2 6 2 6

Applications of heat transfer and fluid flow, mathematical modelling, and optimization n chemical engineering and chemical plant design. In the first term the laboratory is devoted to problems in these topics and in those of subject 665. In the second term, imultation and optimization are carried out for a particular chemical plant. Reference books: *Applied Mathematics in Chemical Engineering* – Mickley, Sherwood, and Reed. *Chemical Reactor Theory* – Denbigh. *Chemical Reaction Analysis* – Petersen.

J. W. Smith, M. E. Charles, M. Wayman, D. Mackay

667. DYNAMICS OF CHEMICAL SYSTEMS

IV – 5c – – 3 –

Elements of chemical rate process, complex chemical system dynamics, chemical eactor stability. Application of analogue computers to the solution of problems in bove topics.

I. H. Spinner

668. APPLIED NUCLEAR CHEMISTRY

IV – 6 (elective) – – 2 –

An introduction to the principles and methods of radioisotope chemistry. Applications f nuclear techniques and radioactive materials in chemical technology and in nuclear ower generating systems. Topics to be covered include: radioisotope methods of udying chemical reaction mechanisms and kinetics; chemical process development nd process control; nuclear reactions applied to chemical analysis (activation analy- s); production of nuclear materials such as uranium, plutonium, heavy water; hemical processing of irradiated reactor fuels; radiation chemical processing.

R. E. Jervis

669. ADVANCED SEPARATION PROCESSES

IV – 6 (elective) 2 – – –

heory and application of a number of separation processes, including multicompo- ent distillation (using computational techniques), azeotropic and extractive distilla- on, liquid extraction, transient behaviour and cyclic processes, thermal diffusion eparations, and solid-liquid contacting operations. Illustrative design problems.

D. Mackay, O. Trass

670. NUCLEAR ENGINEERING

IV – 5nt 2 – 2 –

uclear engineering aspects of: nuclear constitution and properties including cross- ction, energetics, radioactivity, production and use of radio-isotopes, neutrons, slow-

ing down, "age" theory, diffusion of thermal neutrons, fission. The age and two-group theories of the reactor core. Reflected reactors (elementary treatment). Reactor kinetics, control and instrumentation. Applications of heat transfer, fluid flow and stress analysis to the reactor core. The measurement and control of radiation. Exposure of humans to radiation. Shielding techniques. Nuclear engineering applications of nuclear and radio-chemistry.

D. G. Andrews, R. E. Jervis

671. NUCLEAR ENGINEERING LABORATORY

IV – 5nt – 3 –

A laboratory course to accompany subject 670. Experiments are carried out with radiation sources and instruments, a sub-critical reactor, a reactor simulator, pulse height analyzers, fast neutron generators and radioactive tracers.

D. G. Andrews, R. E. Jervis

672. MOLECULAR THERMODYNAMICS

IV – 6 (elective) 2 – –

Molecular thermodynamics is the use of classical and statistical thermodynamics together with knowledge of molecular behaviour, in equilibrium analysis of chemical systems. After development of principles and working tools, applications are made to fluid behaviour, and phase and reaction equilibrium.

R. W. Misse

673. STRATEGY OF PRODUCT AND PROCESS ENGINEERING

IV – 6 (elective) 2 3 –

The strategical approaches needed for the solution of engineering problems involving the creation of novel unit operation equipment and novel processes, both for chemical and non-chemical products.

R. F. Hunter, I. H. Spinne

674. PIPELINE TRANSPORTATION

IV – 6 (elective) 2 – –

A course based on the theory and practice of moving gases, liquids and solids by pipeline both within chemical plant and over long distances. Operating pipeline systems are used as examples, and the course includes a feasibility and design study.

M. E. Charl

675. CONVECTIVE HEAT AND MOMENTUM TRANSFER

IV – 6 (elective) 2 – –

A continuation of earlier courses on convective heat and momentum transfer flowing fluids. A phenomenological approach based on current research.

J. W. Smi

676. POLYMER ENGINEERING

IV – 6 (elective) 2 – –

A course covering the structures and properties of organic high polymers, and how these affect specific applications requiring plastics, elastomers, fibers, or composites.

H. L. Willia

77. WOOD CHEMISTRY

IV – 6 (elective) 2 – – –

The organic and physical chemistry of cellulose, lignin, hemicelluloses and extractives of wood, and its application to the technology of pulping and bleaching in the manufacture of paper pulps.

W. H. Rapson

78. COMPOSITE MATERIALS

IV – 6 (elective) – – 2 –

A course on the fundamental principles of the science of composite materials. Topics will include the reinforcement of plastics, metals, ceramics and elastomers with fibers, flakes, and other particulate fillers.

M. R. Piggott, R. T. Woodhams

79. CERAMICS

IV – 6 (elective) 2 – – –

An introduction to the field of ceramics, including a description of the available raw materials, the production of refractories and glasses, and high-temperature experimental techniques.

D. Barham

80. CO-ORDINATION CHEMISTRY

IV – 6 (elective) – – 2 –

The fundamental principles underlying co-ordination compounds: bonding, geometry and isomers, stability, etc., leading to an understanding of examples such as chlorophyll and sequestering agents.

J. G. Breckenridge

81. ENVIRONMENTAL ENGINEERING

IV – 6 (elective) – – 2 –

Principles and design procedures of air, water and soil pollution control processes, with emphasis on aqueous industrial waste treatment. Chemical, physical and biological approaches will be discussed. Field trips will be arranged.

D. Mackay, C. R. Phillips

82. CHEMICAL BONDING

IV – 6 (elective) – – 2 –

An extension of the principles encountered in the course in Inorganic Chemistry given to II Year Course 6; a more detailed study of the chemistry of the elements.

R. L. Hummel

83. NUCLEAR ENGINEERING

IV – 6 (elective) – – 2 –

Nuclear engineering aspects of: nuclear constitution and properties including cross-section, energetics, radioactivity, production and use of radio-isotopes, neutrons, slowing-down, diffusion of thermal neutrons, fission. Applications of heat transfer to the reactor core; measurement and control of radiation, exposure of humans to radiation, shielding techniques.

D. G. Andrews

684. INTERFACE KINETICS

IV – 6 (elective) 2 – –

A course on the chemical kinetics of catalytic processes and the design of chemica reactors.

W. F. Graydo

DEPARTMENT OF ELECTRICAL ENGINEERING

700. ELECTRICITY

I – 1, 3, 4, 6, 7, 8, 9 2 ¾ 2 ¾

A basic course in electricity and magnetism including electric forces and fields, ana lysis of direct-current circuits, magnetic forces and fields, induction, and an introduc tion to the conductive, magnetic and dielectric properties of materials.

Staff in Electrical Engineerin

701. ELECTRICITY

I – 5 2 – 2

A basic course in electricity and magnetism that is similar to subject 700 but adapte to the needs of Course 5.

Staff in Electrical Engineerin

710. CIRCUIT THEORY I

II – 7 3 2 –

Linear lumped-parameter circuits as models for physical devices; relationships be tween circuit and field concepts. Transient response of simple circuits; natural an forced components of response. Response to complex-frequency excitation; impe dance and admittance functions. Steady-state response of circuits with direct an sinusoidal sources.

711. ELECTRIC AND MAGNETIC FIELDS

II – 7 – – 3

Static electric and magnetic fields. Properties of dielectric and magnetic media. Pa ticle dynamics in electric and magnetic fields. Time-varying fields. Development Maxwell's equations and interpretation.

712. CIRCUIT THEORY II

II – 7 – – 2

Loop and nodal analysis. General network theorems. Coupled circuits. Response networks to variable-frequency excitation. Analysis of polyphase circuits; introductio to symmetrical components.

713. ELECTRICAL LABORATORY

II – 7 – 3 –

Introduction to techniques of electrical measurement.

14. INTRODUCTORY ELECTRONICS

II – 7 – – 2 3

he broad application of semiconductor devices to common engineering systems; basic vice characterization, modelling, amplification, waveshaping, switching.

15. ELECTRIC CIRCUITS

II – 5 2 1½ 2 1½

rcuits as models for physical devices. Kirchhoff's laws. Transient response of circits. Steady-state response of circuits with sinusoidal excitation. Network theorems. pology and loop and nodal analysis of general circuits. Complex frequency analysis circuits. Response of circuits to variable-frequency excitation. Analysis of polyase circuits. Magnetically coupled circuits.

17. CIRCUIT THEORY AND MEASUREMENTS

II – 3 3 3 – –

roduction to linear circuit analysis. Phasor representation and the analysis of alternting current circuits in the steady state. Transducers for electrical measurement of n-electrical variables, and associated instrumentation.

19. ELECTRICAL ENGINEERING

II – 6 2 3 2 3

alysis of single-phase and three-phase circuits; principles of a-c and d-c machines; roduction to vacuum-tube and solid-state devices; basis of digital computation and alogue simulation; electronic measurements applied to industrial processes.

71. NUMERICAL METHODS

II – 7 – – 2 2

mentary numerical methods for systems of equations, iteration, integration, differial equations, roots, and random number generation, including a study of roundoff al truncation error. Basic computer structure and organization. Algorithms, procedres, and flowcharts. Discrete simulators and continuous simulators.

72. ELECTRICAL ENGINEERING

II – 4 – – 3 3

ourse similar to 719 but adapted to the needs of students in Industrial Engineering.

73. PHYSICAL ELECTRONICS I

III – 7 2 1½ – –

III – 8 2 ¾ – –

prime objective of 730 and 731 is to provide a sound physical understanding of phenomena and devices in modern electronics. Circuit models of devices are developed from the mathematical models which describe the basic device physics. Band theory

of solids: Fermi-Dirac statistics. Metals, semiconductors and insulators: thermioni emission, Schottky effect and high field emission with examples. Contact potentials Semiconductor theory: band structure of Ge, Si and III-V compound semiconductors Intrinsic and extrinsic semiconductors: general calculation of the Fermi level, hol and electron densities. Mobility, conductivity and their temperature dependence. Dif fusion. The continuity equation and its solution. Theory of p-n junctions; minorit carrier injection, basic equations. Depletion and diffusion capacitances. Circuit models Other diode structures: tunnel diodes, Schottky barrier diodes, Gunn diode.

731. PHYSICAL ELECTRONICS II

III – 7 – – 2 1½

Unipolar transistors: basic types: junction-gate, M.I.S., and thin-film F.E.T.'s theory circuit models. Bipolar transistors: fundamental theory, injection efficiency, bas transport efficiency, small-signal low-frequency models. Charge storage models. High frequency, small-signal analysis and circuit models. Fundamentals of integrated ci cuits: fabrication theory and technology: diffusion, epitaxy, oxide masking: capac tors, resistors, bipolar and unipolar transistor integration. Examples. Photoelectronic solid-state optoelectronic phenomena: photoconductive, photovoltaic and p-n junctio radiation detection. Vacuum photoelectronics: image orthicon, vidicon, image storag and intensification.

732. APPLIED MATHEMATICS I

III – 7 2 2 –

Theory of functions of complex variables, with applications.

733. LINEAR SYSTEMS THEORY

III – 7 4 2 –

Correlation with orthogonal functions as a method of signal transformation. Fouri series, generalized Fourier and bilateral Laplace transforms; existence, uniquenes and properties. Time-domain analysis; weighting functions, convolution, convolutio algebra, similarity of correlation and convolution. Frequency-domain analysis; transf functions, filter characteristics, pole-zero configurations. Frequency-domain convol tion; time-varying systems and modulation. Matrix methods for multiple input-outp systems; theory of linear two-port networks.

734. ELECTROMECHANICAL SYSTEMS I

III – 7 2 3 –

Processes of electromechanical energy conversion; modelling and analysis of magnet devices and systems; transformers and saturable reactors; commutator machines.

75. ELECTROMECHANICAL SYSTEMS II

III – 7 – – 2 3

Generalized polyphase machines; induction and synchronous machines; introduction to the control of electric machine systems.

76. APPLIED MATHEMATICS II

III – 7 – – 3 2

Introduction to Modern Algebra. Elementary theory of probability and stochastic processes.

77. ELECTRONIC CIRCUITS I

III – 7 – – 2 3

PN junction diode models: advanced applications of p-n junction diodes. Temperature dependence of diode characteristics and methods for compensation. Amplifiers, specifications, general methods of design. Field-effect transistors: characteristics, biasing, amplifiers, voltage controlled resistance. Bipolar transistors: basic concepts, fabrication: power gain: basic configurations: Ebers and Moll model: circuit models: single and multistage amplifiers. Switching properties; feedback amplifiers: oscillators. Narrow and wide band amplifiers. Power amplifiers. Integrated circuit design techniques.

79. PHYSICAL ELECTRONICS

III – 5cs, 5e, 5m, 5p 2 1 2 1

The objective of this course is to provide a sound understanding of physical phenomena associated with semiconductor devices. Band theory of solids. Metals, semiconductors, insulators. Thermionic emission, contact potential. Semiconductor theory. Schottky barrier (hot carrier) diodes. P-n junctions, Read diode, tunnel diode. Bipolar transistors. Field effect transistors, MOS transistor. Unijunction transistor. Fundamentals of integrated circuits. Photoelectronics: image orthicon, vidicon, image storage.

70. ELECTRONICS

III – 5a, c, cs, eg, p 2 – 2 1½

Qualitative treatment of the physical principles of electron devices; analysis of idealized and basic practical rectifying and power-modulating circuits; some applications to systems.

73. ELECTRONICS

III – 3 2 3 – –

Principles of electronics. Linear models of electronic devices. Amplifiers, oscillation and filters. Electronic circuits.

744. SYSTEM AND SIGNAL ANALYSIS

III – 5e 2 1½ –

Formulation of system models. Linear system theory from state space and from input output points of view. Signal representations. Integral transforms and their application to signal and system analysis.

747. ELECTRIC MACHINES

III – 3 – – 2

Principles of energy conversion. Transient operation of electromechanical systems Electromechanical circuits. Rotating machinery.

750. FIELDS AND WAVES

III – 7 2 2 –

Propagation of plane waves. Reflection of waves at plane boundaries. Guided waves Transmission line theory. Smith chart. Radiation from antennas. Diffraction and scattering. Introduction to holography.

751. THERMODYNAMICS AND STATISTICAL MECHANICS

II – 7 – – 3

The fundmental principles of thermodynamics and statistical mechanics; Boltzmann Fermi-Dirac and Bose-Einstein distributions and their applications to electric, magnetic and electromagnetic systems; elementary theory of fluctuations.

754. ELECTROMAGNETIC FIELDS

III – 5cs; IV – 7 (elective) 2 1 –

Relation between field theory and circuit theory. Maxwell's equations. Unbounded field systems. Boundary conditions for time-varying fields. Plane waves in dielectric media. Phase and group velocity. Standing waves. Poynting vector. Energy relation in travelling and standing waves. Wave polarization. Plane waves in conducting medi Depth of penetration. Reflection and transmission of waves at a boundary. Transmission lines. Terminated uniform transmission lines. Transmission-line charts. Wave in infinite-parallel-plane transmission line. Modes in hollow rectangular waveguid Antennas. Retarded potentials. Small Loop Antenna. Short Dipole Antenna.

760. SWITCHING THEORY

III – 5cs; IV – 7 (elective) 2 1 –

Boolean algebra, boolean functions, combinational networks, minimum complexi combinational networks, Karnaugh and Quine-McCluskey minimization. Sequenti machines state assignment, state reduction, relationship to switching components. Th problems period will provide exercises in logic and sequential machine analysis an synthesis.

61. INFORMATION PROCESSING SYSTEMS I

IV – 7 (elective) 2 1 – –

umber representation: Binary number system, representation of negative numbers, inary arithmetic. Computer architecture: basic hardware structure, registers, memory stem, addressing, instructions, 1/0. Programming languages; machine language proramming, basic and macro assemblers, compilers. (PL/1, Algol. simulators). Proramming systems: data structures, properties of data types, syntax structures, parsg, symbol tables. The problems period will include exercises in programming in 360 sembly language and in a variety of high level languages.

62. ELECTROMAGNETIC THEORY

IV – 7 (elective) 2 1 – –

ave polarization. Rectangular and circular waveguides. Uniqueness of solutions. ave propagation in the ionosphere. Radiation from wire antennas, simple arrays and ntinuous current distributions. Fields and impedance of a current-carrying conductor. ncepts of impressed, induced and equivalent sources. Reciprocity. Calculation of lf and mutual impedance.

63. UNIFIED MACHINE THEORY

IV – 7 (elective) – – 2 1½

e theory of linear passive power invariant transformations is developed. Electroagnetic devices will be presented by flux linkage models which are then modified by rious generalized transformations in order to facilitate their representation in sysms requiring transient and steady state stability studies. A generalized co-ordinate nsformation system for an m-n phase system revolving with respect to any arbiry reference frame is developed and this is then reduced to the more classical ase, dq, or symmetrical component models. Evaluation of system parameters reired for the models will be discussed.

64. ELECTRICAL SYSTEMS

IV – 8 2 – – –

ectrical heating and melting. High temperature and vacuum applications. Controls. Istrumentation. Sensors. Transducers. Automation. Feedback. Logic circuits and mputers.

65. CONTROL SYSTEMS I

IV – 7 3 1½ – –

en-loop and closed-loop control; feedback systems. Flow-graph analysis of complex stems. Steady-state performance analysis. Stability analysis for linear time-invariant stems; algebraic, real-frequency, and root-locus methods. Design of single inputtput controls. Elementary nonlinear analysis.

766. SYSTEM DYNAMICS

IV – 5e, 5p 2 1½ –

A study of the dynamic behaviour of systems, using the techniques of state representation, Laplace and Z transforms, frequency-response and root-locus methods. Introduction to feedback control systems. Stability and compensation of linear and nonlinear control systems.

767. INTRODUCTION TO OPTIMAL CONTROL

IV – 5e – – 2

An introduction to the calculus of variations, the maximum principle and dynamic programming, as they apply to the optimal control of systems. Introduction to computational methods of optimization.

768. ELECTRONIC CIRCUITS II

IV – 7 2 3 –

Design of semiconductor circuits emphasizing bias stabilization, feedback d-c amplifiers, broadband amplifiers, tuned amplifiers and large signal applications.

770. COMMUNICATION SYSTEMS

IV – 7 (elective) – – 2

A book is recommended as follows: "Communication Theory Principles" by Charle W. McMullen.

Initial material amplifies the role and properties of the Fourier integral and the doubl sided Laplace transform as a means of describing communication signals and system Early attention is paid to the synthesis of desired input output relationship by mear of feedback circuits and by means of the transversal filter techniques.

The next topics are modulation and sampling, the convolution theorems, Nyqui (1928) band-limited signaling, sampling theory, and vestigial side band transmissio Elementary probability and statistical theory is introduced next to support the fund mental ideas of information theory, noise in electronic circuits, and random signals.

772. NETWORK THEORY

IV – 7 (elective) 2 1 –

Network analysis. One-port and two-port network parameters, and their relation determinants of network equations. Natural frequencies. Transfer functions of tw ports. Interconnections of two-ports. Energy functions. Properties of network functio Synthesis of LC, RC and RL one-ports. Positive real functions. Testing for positi realness. The Froster preamble. Brune realization. Brief treatment of Bott-Duffin a Miyata realizations. Properties of general passive two-port functions, balanced a unbalanced two-ports with and without magnetic coupling, and lossless two-p functions. Magnitude and angle functions. Minimum-phase and all-pass functio Realization of lossless singly – and doubly – terminated two-ports.

74. INTEGRATED CIRCUITS

IV – 7 (elective) – – 2 1½

esign of integrated circuits with particular emphasis on the interaction between evice and circuit design. Thin film and semiconductor integrated circuits. Design of tegrated circuit components: capacitors, resistors, inductors, diodes, transistors. inear and digital integrated circuit design techniques and limitations.

75. SEMICONDUCTOR PHYSICS

IV – 7 (elective) 2 1½ – –

lected topics in important physical concepts, allied to a deeper understanding of the roperties of semiconductors, comprising: Crystal structure and crystal binding. lastic waves. Phonons and lattice vibrations. Thermal properties. Theory of metals. and theory applied to semiconductors. Semiconductor carrier concentrations and ansport.

76. RADIATION AND PROPAGATION

IV – 7 (elective) (prerequisite – 762) – – 2 1½

icrowave amplifiers and oscillators. Microwave components. Antenna arrays. Micro- ave communication systems. Formal solution of boundary value problems; Green's nctions. Scattering by conductors. Diffraction by apertures. Fourier optics and holo- aphy. Spherical-earth propagation.

77. QUANTUM PHYSICS

IV – 7 (elective) 2 1½ – –

velopment of Schroedinger equation and its application to simple models of atomic stems. Zeeman effect, angular momentum and electronic spin. Pauli principle and ctron theory of atomic structure.

78. ELECTRONIC CIRCUITS

IV – 5a, 5cs, 5e, 5p 2 3 – –

sign of electronic circuits. Multistage amplifiers. Feedback amplifiers. Oscillators. C amplifiers. Wideband amplifiers. Tuned amplifiers. Mixers. Detectors. Active fers. Negative impedance converters. Gyrators. Introduction to computer design of ctronic circuits.

79. POWER SYSTEM ANALYSIS

IV – 7 (elective) 2 1½ – –

gineering criteria for generation, transmission and distribution of electrical energy i bulk. Characteristics of components and their significance to power system safety, liability and economy. Behaviour of elementary power systems under normal and fult conditions.

780. POWER SYSTEM CONTROL

IV – 7 (elective) – – 2 1½

Economic management of electric power system operation. Methods for determination of load flows. Economic scheduling of generating plants. Basic concepts of load frequency control. Analysis of power system dynamical performance including the effects of generator controls.

781. APPLIED MATHEMATICS III

IV – 7 (elective) 2 1 –

Partial differential equations and the calculus of variations.

782. INFORMATION SYSTEMS I

IV – 5cs, 5e 2 1 –

Probability theory, probabilistic formulation of the communication problem, representation of physical communication channels, Gaussian noise process, power spectrum, correlation function, vector model of a communication channel, error rate estimates, channel capacity theorem, analogue digital analogue conversion techniques, coding for transmission in noise. Text – Principles of Communication Engineering - Wozencraft and Jacobs.

784. QUANTUM ELECTRONICS

IV – 7 (elective) (Prerequisite – 777) – – 2

Theory of radiation absorption and emission; susceptability, population inversion and maser action. Maser and laser materials and device properties, limitations and use of the devices; nonlinear behaviour of materials at optical frequencies.

786. INFORMATION SYSTEMS II

IV – 5e – – 2

A study of the transmission and processing of digital information: Information sources; exponential error bounds and capacity theorems for coding and waveform channels; block and convolutional coding.

787. TECHNIQUES OF OPTIMIZATION

IV – 5cs, 5e – – 3

Linear and non-linear mathematical programming; dynamic programming; queueing theory; some problems in control theory; Monte Carlo methods. Applications will be drawn from engineering practice.

790. WAVE THEORY

IV – 5e, 5p 2 1½ –

Guided TE, TM and TEM waves. Attenuation of guided waves. Coaxial, stripline and microstrip TEM lines. TEM lines as circuit elements. Variational and conformal mapping techniques for determining characteristic impedances of TEM lines. Smith chart. Propagation in rectangular and circular waveguides. Inhomogeneously filled

aveguides. Discontinuities in waveguides. Transients in waveguides. Periodic structres. Radiation. Antenna fundamentals. Antenna arrays. Measurement techniques.

92. ACOUSTICS

IV – 7 (elective) – – 2 1½

he physical and psychological nature of sound. The production, detection, and easurement of physical sound. Relationships between physical sound signals and ychological experiences. The behaviour of sound outdoors and indoors. Engineerig criteria for noise and vibration. Tests, standards, and codes. Noise control ethods.

V. L. Henderson

93. CONTROL SYSTEMS II

IV – 7 (elective) – – 2 1

ate representation of dynamic systems. Vector-matrix differential and difference uations as descriptions of linear systems. Eigenvalues, eigenvectors, and transition atrices. Controllability and observability. Introduction to optimization. Emphasis roughout on the use of analog and digital computers as aids to analysis and nthesis.

94. ILLUMINATION

IV – 7 (elective) – – 2 1½

he course deals in general with the engineering problems which relate to the effecte use of light (physical, physiological and psychological) in the everyday life of an. The topics covered include: The nature and characteristics of light; The production of light: incandescence and luminescence; The human eye, visual processes, and sual phenomena; Radiometric and photometric units and laws; Photometric measurents; Calculation of photometric quantities; Design of the visual environment: inciples which relate to visual comfort and efficiency; Colour and colorimetry; ght sources – circuits and controls; Visual problems at low light levels e.g. street hting. The laboratory supplements the theoretical material of the lecture course.

Miss M. G. Currie

95. POWER SEMICONDUCTOR CIRCUITS

IV – 7 (elective) – – 2 1½

inciples of thyristor devices. Study of inverter, converter and rectifier circuits with rticular applications to DC and AC motor speed control and frequency conversion.

96. BIOMEDICAL ENGINEERING

IV – 7 (elective) – – 2 1½

n introduction to some aspects of the interaction between engineering and medie, given by the staff of the Institute of Bio-Medical Electronics and Engineering: sic Anatomy and Physiology; Biological communication processes; Biological feedck and control; Bio-medical instrumentation; Cardiovascular measurements; Radiatn diagnosis. The course is accompanied by laboratory experiments.

797. ELECTRODYNAMICS

IV – 5a, 5e, 5p, 7 (elective) (Prerequisite – 762 or equivalent) – – 2 1½

Maxwell's equations and constitutive relations in different media. Linear and nonlinear media. Coupled mode approach. Field theory approach. Dispersion relation theory: causality, stability, group and phase velocity. Wave/particle interactions: travelling wave tube, klystron, backward wave oscillator, beam/plasma interaction, acoustic wave interactions, interactions in semiconductors. Wave/wave interactions: parametric interactions, optical amplifiers. Nonlinear wave/particle interactions. Relativistic electrodynamics.

798. INFORMATION PROCESSING SYSTEMS II

IV – 7 (elective) (Prerequisite – 761) – – 2 1

Computer organization: register implementations, register transfers, memory, control unit logic, instruction processing logic, execution unit, simple implementations of arithmetic operations. Programming languages; some advanced concepts of applications and systems programming in both business and scientific areas. Formal languages and machines: finite state language and automata, formal grammars, context free languages and their relation to programming languages, Turing machines. The laboratory session will include problems in 360 assembly language programming based on the course.

799. SWITCHING CIRCUITS

IV – 5cs, 5e, 7 (elective) – – 2 1½

Large signal modelling of nonlinear circuit elements; analysis of static and transient circuit behaviour; use of time-domain circuit simulation. Design to specification with imperfect components – worst case and statistical approaches to reliable design. Application to solid state switches, multivibrators and networks of cascaded gate circuits. Signal transmission methods. Integrated circuit technology. Physical phenomena applicable to memory functions – ferromagnetics, cryogenics, electrostatics, photochromics, acoustics. Address selection principles. Universal requirement for high-current switches and sense amplifier design. Techniques for improving signal-to-noise performance.

Note: An elementary knowledge of switching theory will be assumed. This may be obtained from Course 760 – Switching Theory, or by self study.

DEPARTMENT OF METALLURGY AND MATERIALS SCIENCE

802. EXTRACTIVE METALLURGY

III – 8 2 –

A fundamental treatment of the metallurgical processes involved in the production of the important non-ferrous metals, including oxidation of sulphides in the liquid a

olid states, reduction of oxides, matte-slag equilibrium, metal-slag equilibrium, and ne distillation of metals.

H. U. Ross, J. M. Toguri

03. EXTRACTIVE METALLURGY LABORATORY

III – 8 – 3 – 3

xperiments in materials processing, including roasting, smelting, leaching, refining, ectrolysis to accompany Course 802. Eight laboratory reports per term.

H. U. Ross

04. EXTRACTIVE METALLURGY

III – 9 2 – 2 –

he metallurgical processes involved in the beneficiation of ores and the extraction of etals therefrom and their subsequent refinement.

L. M. Pidgeon, H. U. Ross

05. EXTRACTIVE METALLURGY

IV – 8 2 – 2 –

he extractive metallurgy of iron, steel, and the reactive metals.

C. B. Alcock, H. U. Ross, J. M. Toguri

06. EXTRACTIVE METALLURGY LABORATORY

IV – 8 – 3 – 3

xperiments in the extraction and refining of metals and related processes to accompny subject 805. Six laboratory reports per term.

C. B. Alcock, H. U. Ross, J. M. Toguri

07. SOLID STATE CHEMISTRY

II – 8 2 2 – –

Elementary crystal chemistry, co-ordination numbers, radius ratio. The Born-Haber cle and replacement reactions. Point defects, non-stoichiometry and conductivity. Te Schroedinger equation and its solution in terms of orbitals. Bonding in condensed pases.

C. B. Alcock

08. INSTRUMENTAL ANALYSIS

II – 8 – – – 3

Te analysis of ores, concentrates, slags and alloys employing the techniques of wet alysis, polarography, electrogravimetry and spectroscopy.

H. U. Ross

09. MINERAL DRESSING

III – 8 (elective) – – 2 –

Te theory and practice of minerals beneficiation, including relevant aspects of meralogy, surface chemistry and flotation, physical separation and leaching rocesses.

H. U. Ross

810. THERMODYNAMICS

III – 8 2 – 2 –

A study of chemical equilibria at high temperatures in extractive metallurgy – slag metal reactions – classical theory of solutions – phase transformations – thermodynamic relationships in phase diagrams.

H. U. Ross

812. METALLURGICAL PROBLEMS LABORATORY

III – 8 – 4 – 2

Problems in chemistry, physical chemistry and thermodynamics as applied to metallurgical processes, and solid state reactions relating to subjects 802 and 810.

S. N. Flengas, H. U. Ross

813. ELECTROCHEMICAL PROCESSES

IV – 8 – – 2

Electrochemistry of solids, liquids, and of high temperature systems. Fused salt electrochemical cells. Thermodynamics of imperfections and properties of ionic solids.

S. N. Flengas

814. METALLURGICAL PROBLEMS LABORATORY

IV – 8 – 3 –

Problems relating to courses 805, 815 and 823.

Staff in Metallurgy and Materials Science

815. MATERIALS SCIENCE

IV – 8 – – 3

Structures and properties of interfaces, recovery and recrystallization, annealing textures and anisotropic properties. Solidification and casting, growth of single crystal and zone refining.

K. T. Aust, J. W. Rutter

817. STRUCTURE OF MATERIALS AND METALLOGRAPHY

II – 8 2 3 –

A course dealing with both the theoretical interpretation and the experimental determination of the structure of solids. Structure is discussed in terms of crystallography, defects in crystals, amorphous materials, polycrystalline grain structure and phase distribution in alloys. Metallographic techniques for the determination of microstructure by optical, x-ray, electron and field-ion microscopy are considered, as are the introductory principles of x-ray diffraction.

U. M. Franklin, W. A. Miller

819. MATERIALS SCIENCE I

II – 7 3 1½ –

The thermal, mechanical and chemical properties of materials will be related to the microscopic structure. Atomic bonding, crystal structure (with special emphasis on Group IV and Group III–V semiconductors): Thermodynamics of solids, defects. Solid-state diffusion. Phase diagrams, phase transformations with examples. Single crystal growth. Mechanical properties: stress, strain and shear relations for isotrop

nd anisotropic materials; annealing, structural materials; fabrication processing. orrosion.

J. W. Rutter

20. SOLID STATE SCIENCE

III – 5m, 8 2– – –

iffusion in solids. Phase stability and alloy theory. Magnetic, electrical and optical roperties of materials.

U. M. Franklin

21. PLASTIC DEFORMATION AND MECHANICAL PROPERTIES

III – 5m, 8 – – 2 –

lastic deformation and the mechanical properties of materials are discussed in terms dislocation theory. Slip and twinning, work hardening and other strengthening echanisms, and the processes of creep and fatigue are some of the most important opics considered.

B. Ramaswami

22. PHYSICAL METALLURGY LABORATORY

III – 5m, 8 – 3 – 3

n introductory series of experiments dealing with annealing and recrystallization, lastic deformation and mechanical properties, and the use of metallographic, x-ray nd non-destructive testing methods.

U. M. Franklin, W. A. Miller

23. PHYSICS OF METALS

IV – 5m, 8 3– – –

Application of thermodynamics and kinetics to solid state phase transformations, theory of martensitic transformations, structures and properties of ferrous materials.

G. B. Craig, G. C. Weatherly

24. PHYSICS OF METALS LABORATORY

IV 8 – 3 – –

Practical work relating to subject 823.

G. B. Craig, G. C. Weatherly

25. MATERIALS SCIENCE LABORATORY

III – 8 (elective) – 3 – –

Projects in materials science, chosen by the student, and carried out in close consultation with the staff.

B. Ramaswami

26. POWDER METALLURGY

IV – 8 (elective) – – 2 –

Production and agglomeration of powders, the theory and practice of sintering, and the application of powder methods in the production of refractory metals, cemented carbides and other materials.

Staff in Metallurgy and Materials Science

827. MATERIALS SCIENCE LABORATORY

IV – 5m ---6

The design and execution of one or more experiments on a topic of current interes in the field of chemistry and physics of materials.

Staff in Metallurgy and Materials Science

828. PHYSICAL METALLURGY PROJECT

IV – 8 (elective) ---3

A laboratory project in physical metallurgy relating to course 823.

G. B. Craig

829. EXTRACTIVE METALLURGY PROJECT

III – 8 ---3

A laboratory project in extractive metallurgy relating to course 802.

H. U. Ros

830. METALLURGICAL THERMODYNAMICS

III – 5m 222

A study of chemical equilibria at high temperatures in metallurgy; slag metal reac tions; chemical theory of solutions; alloys; phase transformations; thermodynami relationships in phase diagrams; statistical concept of entropy; simple partition func tions; quasichemical approach to the theory of solutions; methods of investigatin thermodynamic properties.

S. N. Flengas

832s. MATERIALS SCIENCE

II – 8 --3

A course on the structure and properties of plastics, glass, ceramics, semi-conductors and concrete.

Staff in Chemical Engineering, Civil Engineering, Electrical Engineering Metallurgy and Materials Scienc

834. MATERIALS SCIENCE

II – 4 33–

A discussion of the effects of microscopic and atomic structures on the electrica chemical and mechanical properties of engineering materials. The topics covere include atomic bonding, structures of ideal and real crystals, phase transformatior and diffusion, chemical and mechanical properties, and oxidation and corrosion phe nomena. The laboratory experiments will include x-ray studies of crystal structur measurement of resistivity and magnetism of selected solids; study of various allo phases and transformations; study of dislocation patterns, stress-strain relationship stress-relaxation and fatigue phenomena; study of oxidation and corrosion reaction

B. Ramaswan

35. MATERIALS SCIENCE II

III – 7 – – 2 1½

The magnetic, dielectric and conductive properties of materials, as related to their structure, will be discussed. Magnetic properties: dia-, para-, ferro-, antiferro-, and ferri-magnetic phenomena; magnetic domains and domain wall motion; "hard" and "soft" magnetic materials; magneto-striction. Dielectric materials: insulating properties; conduction mechanism; dielectric loss. Ferroelectric materials. Electrical conduction: temperature dependence; effect of composition and structure on conductivity. Thermoelectric phenomena.

U. M. Franklin

36. REACTION KINETICS

IV – 8 2 2 – –

Kinetics of heterogeneous reactions. Diffusion controlled processes. Imperfections in solids. Fick's laws of diffusion. Application of theory to metallurgical operations.

J. M. Toguri

37. MATERIALS SCIENCE

II – 3 2 – 2 1½

A discussion of the effects of microscopic and atomic structures on the properties of engineering materials. The topics covered include atomic bonding and structures of materials, diffusion, crystal growth and solidification, plastic deformation and annealing, precipitation hardening, phase transformations especially in ferrous materials, relationships between structures and mechanical properties of metallic and non-metallic materials, and composite materials.

The laboratory experiments are designed to illustrate the principles underlying the relationship between structures and properties of engineering materials.

K. T. Aust

38. MATERIALS SCIENCE

III – 5m 2 – 2 – –

A course on the structures and properties of materials, particularly non-metallic inorganic solids.

W. A. Miller, G. C. Weatherly

39. MATERIALS SCIENCE

IV – 5m 2 3 2 3

A continuation of course 838 with emphasis on physical and mechanical properties of materials; high-purity and composite materials. The laboratory work deals with experimental studies of the relationship between structures and properties of materials. Application of x-ray, electron microscopy, electron diffraction, electron microbeam techniques to the study of materials.

K. T. Aust, J. W. Rutter

41. THEORY OF METALLURGICAL REACTIONS

IV – 5m 2 – – –

Metal extraction and refining processes are examined in terms of chemical thermo-

dynamics and kinetics. The principles and methods of extraction of ferrous and nonferrous metals, roasting, leaching and electrowinning are typical of the subjects discussed.

J. M. Toguri

842. HIGH TEMPERATURE PHYSICAL CHEMISTRY

IV – 5m 2 3 2 3

Properties of solids and liquids at high temperatures; thermodynamics of defects; solid oxide electrolytes; mechanism of electrical conductivity in ceramic phases; fused-salt electrolytes; reactions in fused-salt media; electrochemical cells at high temperatures; fuel cells; structural properties of simple and complex liquid phases; electrochemical corrosion and passivation; kinetics of heterogeneous reactions.

S. N. Flengas

INSTITUTE FOR AEROSPACE STUDIES

1028. FLUID MECHANICS

III– 5a 2 – 1 –

Introductory concepts and idealizations of real fluids; mathematical theory of incompressible inviscid flow; viscous flow and turbulence. Reference books: *Fundamentals of Hydro and Aeromechanics* – Prandtl and Tietjens; *Applied Hydro and Aeromechanics* – Prandtl and Tietjens; *Fluid Dynamics* (1948 ed.) – Streeter. Advanced reading: *Hydrodynamics* – Lamb; *Incompressible Aerodynamics* – Thwaites.

J. W. Locke

1029. FLUID MECHANICS LABORATORY

III– 5a – 3 – 1½

Problems and experiments related to subject 1028. Seven laboratory reports.

J. W. Locke, J. B. French

1030. MECHANICS

III – 5a, 5e, 5g, 5m, 5nt, 5p 2 – 2 –

Kinematics, translations and rotation, reference frames. Dynamics of a particle and of a system of particles. Work, energy momentum. Linear oscillator. Simple pendulum (nonlinear). Kepler problem. Collisions. Lagrangian mechanics, generalized coordinates, Hamiltonians, constraints. Rigid bodies; kinematics, inertia, matrix, Euler's equations, torque-free motion, stability, geometrical insights. Vibrations: matrix formulation, characteristic modes and frequencies. Hamilton's principle.

Topics selected by class from: astrodynamics, Hamiltonian mechanics, special relativity, continuous media, and others.

Reference Books: *Principles of Dynamics*, Greenwood Classical Mechanics, Goldstein.

P. C. Hughes

1034. MECHANICS OF STRUCTURES

III – 5a 2 – 2

Basic theorems and principles in the theory of structures (strain energy, virtual displacements, minimum total potential energy). General theory of bending of beam

unsymmetrical bending, thin walled structures, shear flow in multiflanged beams, open nd closed sections). General theory of torsion (thin walled structures, multi-cell tructures, shear centre). Theory of elastic instability (buckling of slender elastic truts, flat and curved plates, shells). Plane stress problems (Airy and Prandtl stress unctions).

R. C. Tennyson

035. MECHANICS OF STRUCTURES LABORATORY

III – 5a – 1½ – 3

roblems and experiments relating to subject 1034. Five laboratory reports.

R. C. Tennyson

040. AERODYNAMICS

IV – 5a 2 – 2 –

erodynamics of flight: drag, propulsion, wing theory. Mechanics of flight: perfor- ance of aircraft, stability and control of aircraft. Reference books: *Aerodynamics f V/STOL Flight* – B. W. McCormick, Jr. *Foundations of Aerodynamics* – Kuethe nd Schetzer. *Flight Mechanics – 1: Theory of Flight Paths* – A. Miele. *Dynamics of light – Stability and Control* – Etkin.

J. H. DeLeeuw

041. AERODYNAMICS LABORATORY

IV – 5a – 1½ – 1½

roblems and experiments related to subject 1040. Six laboratory reports.

J. H. DeLeeuw

042. PHYSICS OF RADIATING GASES

IV – 5a 2 – 2 –

eview of atomic and spectroscopic theory, line radiation, Einstein coefficients, opti- l depth, population inversion and lasers, Doppler and pressure broadening, vibration nd rotation of molecules, local thermodynamic equilibrium, methods, of determining e temperature and electron number density of high temperature gases.

R. M. Measures

043. PHYSICS OF RADIATING GASES LABORATORY

IV – 5a – 1½ – 1½

robe and spectroscopic studies of a low pressure discharge. Three laboratory reports.

R. M. Measures

044. PHYSICS AND MECHANICS OF SOLIDS

IV – 5a 2 – 2 –

roperties of solids, the factors on which they depend. Structural imperfections, atom ovements, dislocation theory. Deformation and failure of metals. Metal fatigue, rvice loads and service load laboratory simulation, statistical evaluation of fatigue ta. Microstructural changes in metal due to fatigue, fatigue damage accumulation, ack initiation and propagation. Environmental effects on service life under fatigue, rface protection. Reference books: *Elements of Materials Science* – Van Vlack. *elastic Behaviour of Engineering Materials and Structures* – Freudenthal.

G. K. Korbacher

1045. PHYSICS AND MECHANICS OF SOLIDS LABORATORY

IV – 5a – 1½ – 1½

Problems and experiments related to subject 1044. Six laboratory reports.

G. K. Korbacher

1046. PLASMADYNAMICS

IV – 5a 2 – 2 –

Electrostatics, magnetostatics, Maxwell's equations, E-M wave propagation, plasma equations of motion and conduction, MHD approximation, tensor conductivity, Alfvén, magnetoacoustic and MHD shock waves, simple flow problems in magneto-gasdynamics, applications to propulsion and power generation. Reference books: *Engineering Magnetohydrodynamics* – Sutton and Sherman. *The electromagnetogas-dynamics of Fluids* – Hughes and Young. *Magnetofluidmechanics* – Cambel.

S. J. Townsend

1047. ENGINEERING DESIGN

IV – 5a – 6 –

A number of multidisciplinary engineering design projects are carried out by the student under the supervision of staff and of experienced design engineers from industry. Drawings and reports are prepared as required.

L. D. Reid

1048. GASDYNAMICS

IV – 5a 2 – 2

The fundamental phenomena that occur in a flow of a compressible fluid are treated. The basic thermodynamics is reviewed and the equations of viscous and inviscid compressible flow are derived. Compressible flow in nozzles and diffusers, and shock and expansion waves in both steady and unsteady flow; and high temperature effects which cause departures from the perfect gas law are discussed. Applications relevant to modern high speed flight are given. Reference books: *Elements of Gasdynamics* – Liepmann and Roshko. *Dynamics and thermodynamics of Compressible Fluid Flow* – Shapiro. *Handbook of Supersonic Aerodynamics, Section 18, Shock Tubes* – Glass and Hall. *Introduction to Physical Gasdynamics* – Vincenti and Kruger.

I. I. Glass

1049. GASDYNAMICS LABORATORY

IV – 5a – 1½ –

Problems and experiments based on subject 1048 are given to illustrate principles of gasdynamics and the measurement of physical quantities. Six laboratory reports.

P. A. Sullivan

1050. TRANSPORT PHENOMENA

IV – 5a – – 2

A fundamental treatment of selected phenomena in fluid dynamics in which the transport of momentum, mass and energy are the key underlying processes, i.e. dynamics of viscous fluids; boundary layers; diffusion. Reference book: *Transport Phenomena* – Bird, Stewart and Lightfoot.

G. W. Johnston

)EPARTMENT OF PHILOSOPHY

040. PHILOSOPHY AND SCIENCE

IV – All courses – – 2 –

hilosophical problems about space and time, focusing particularly on the debate be-veen *absolutist* and *relativist* conceptions of both time and space, from Zeno and ristotle to Einstein. Textbooks: *An Introduction to the Philosophy of Time and pace* – van Fraassen; *Problems of Space and Time (a reader)* – Macmillan 1964.

R. B. DeSousa

)EPARTMENT OF ENGLISH

110. ENGLISH

I – All courses 2 – 2 –

his course is designed to teach students how to handle English tactfully and how to ppreciate some basic forms of English literature. One part of the course will consist f laboratories held in class-time, where, through examples, the art and principles of ood prose will be discussed, and students will be asked to write good prose in very nort essays. The other part of the course will consider a novel, a play, and a few nort stories and poems. The final mark will be awarded in part for the student's chievement in laboratories, and in part for his performance in an examination of the ork studied.

140. ENGLISH LITERATURE

IV – All courses 2 – – –

course in the reading of literary works. Texts will include: Brecht, *Galileo* Methuen); Williams, *A Streetcar Named Desire* (Signet); Beckett, *Waiting for odot* (Grove); Golding, *Lord of the Flies* (Penguin); Heller, *Catch-22* (Dell); rane, *The Red Badge of Courage* (Signet). Students are expected to read the works amed above during the summer preceding their entry into the Fourth Year; rther reading selections may be announced by individual instructors in September. erm work will include a class test on the summer reading to be given in the second cture period of the year, one substantial essay or the equivalent, and one or two rther class tests at the discretion of the instructor.

EPARTMENT OF HISTORY

330. THE HISTORY OF TECHNOLOGY AND ENGINEERING

III – All courses 2 – 2 –

n historical treatment of the development of tools, techniques, and relevant skills om their inception processes will be considered along with the interplay with con-mporary society. Historical points of contact with theoretical and scientific thought ill be examined. The accomplishments, influence, and role of the engineer will be aced from antiquity to current society.

J. W. Abrams

DEPARTMENT OF MATHEMATICS

2410s. ALGEBRA AND ANALYTIC GEOMETRY

I – 1, 3, 4, 6, 7, 8, 9 — 2 1 2 1

Vectors, linear algebra, matrices, solution of linear systems of equations, linear transformations, eigenvalues, linear programming, complex numbers, quadrics.

Staff in Mathematics and Staff in Engineering

2411s. CALCULUS

I – 1, 3, 4, 6, 7, 8, 9 — 2 1 2 1

Limits; derivatives, integrals and their properties with applications; circular and exponential functions and their inverses; differential equations.

Staff in Mathematics and Staff in Engineering

2415s. ALGEBRA AND GEOMETRY

I – 5 — 2 1½ 2 1½

Complex numbers and fields. Polynomials. Linear Algebra: linear equations, vector spaces and linear transformations. Co-ordinate Geometry: lines, planes and surfaces of the second degree.

P. A. Sullivan, L. T. Gardner

2416. CALCULUS

I – 5 — 2 1½ 2 1½

An introduction to the theory and applications of differential and integral calculus. Reference book: *Calculus,* Vol. I – Apostol.

P. Rosenthal, D. K. Ser

2420s. CALCULUS

II – 1, 3, 4, 6, 8, 9 — 2 1 2

Continuation of subject 2410. Partial differentiation, multiple integration, series and Taylor's theorem, complex numbers and hyperbolic functions, first order differential equations and higher order linear differential equations with constant coefficients.

J. Abrham, M. A. Akcoglu, K. Murasugi
H. Radjavi, R. Van Luu

2421. CALCULUS II

II – 7 — 4 2 –

The definite integral, expansion in series, ordinary differential equations, partial differentiation, multiple integration and an introduction to partial differential equations

D. R. Breac

422. PROBABILITY AND STATISTICS

II – 3 – – 3 1½

lements of probability theory, random variables, binomial, Poisson and normal istributions, sampling distributions, tests of significance, control charts, introduction the design of experiments.

D. B. DeLury

423. PROBABILITY AND STATISTICS I

II – 4, 8 2 2 2 2

requency distributions and probability laws; binomial, Poisson, and normal distribuons and the treatment of samples drawn from them; tests of significance and onfidence limits; control charts; introduction to the analysis of variance; design of xperiments; regression theory.

M. S. Srivastava

424. CALCULUS

II – 3 3 1½ – –

ontinuation of subject 2410. Partial differentiation, multiple integration, series and aylor's theorem, first order differential equations and higher order linear differential quations with constant coefficients.

425. CALCULUS

II – 5 3 2 3 2

rdinary and partial differentiation, differentials. Taylor's theorem for functions of ne or more variables, maxima and minima, transformations, convergence and uniform nvergence, differential equations of the first order, linear differential equations with nstant coefficients, methods of indefinite integration, definite integrals, multiple tegrals, line and surface integrals, orthogonal functions. Textbook: *Advanced Calulus* – Taylor.

C. Davis

427. PROBABILITY AND STATISTICS

II – 5 3 2 – –

efinition of probability; binomial, Poisson, and normal distributions; frequency; mpling distributions. Examples of estimation, hypothesis testing, control charts, regression, and analysis of variance.

D. B. DeLury

429. NUMERICAL METHODS

II – 5 – – 2 2

on-linear equations, matrix calculations, quadrature, and ordinary differential quations.

E. V. Swenson

2430. PROBABILITY AND STATISTICS II

III – 4 – – 2

A continuation of course 2423. General regression theory; elements of the theory o sample surveys; an introduction to the theory of stochastic processes.

A. E. Paul

2432. DIFFERENTIAL EQUATIONS

III – 4, 8, 9 2 2 –

First and second order ordinary differential equations, operational methods, variation c parameters, solution in series, Fourier series, Bessel and Legendre functions, the La place transform.

E. J. Barbea

2433. NUMERICAL ANALYSIS I

III – 4 2 2 –

Solution of algebraic equations, systems of linear equations, eigenvalue problems, i terpolation, approximation theory, numerical integration, random numbers. Textbool *Elementary Numerical Analysis* – S. D. Conte. Reference: *Modern Computi Methods* – E. T. Goodwin.

W. K. Hastin

2434. NUMERICAL ANALYSIS II

III – 4 – –

A continuation of course 2433.

W. K. Hastin

2437. THEORY OF FUNCTIONS

III – 5 2 – 2

Complex numbers, limits and series, analytic functions, Cauchy's theorem, Taylor a Laurent series, singularities and their significance, analytic continuation, contour tegration, conformal mapping of one plane region on another. Textbook: *Introducti to Complex Analysis* – Nehari.

W. H. Gre

2438. DIFFERENTIAL EQUATIONS

III – 5 2 –

First order equations solvable by quadratures, the linear equation of general or operator methods, simultaneous linear equations, Sturm-Liouville systems, numer methods. Textbook: *Ordinary Differential Equations* – Birkhoff-Rota. Referenc *Special Functions of Mathematical Physics and Chemistry* – Sneddon; *Differen Equations with Applications* – Ritger and Rose. *P. A. Ta*

2441. THE NUMERICAL SOLUTION OF INITIAL VALUE PROBLEMS

IV – 5cs 2 –

Solution of initial value problems for hyperbolic and parabolic partial differer equations. Difference schemes for nonlinear problems. Discontinuous soluti Stability, consistency.

242. THE NUMERICAL SOLUTION OF BOUNDARY VALUE PROBLEMS

IV – 5cs – – 2 –

erative solutions of large systems of linear equations. Difference approximations for iptic boundary value problems; consistency, convergence. Mixed initial-boundary lue problems of linear parabolic type; stability.

243. NUMERICAL ANALYSIS

IV – 3 – – 2 –

ethods of solution of linear systems of equations, round-off errors, roots of equaons, quadrature, approximations and rates of conversions, numerical solution of ordiry and partial differential equations. Exercises to be done on the computer will be signed.

A. Sedgwick

245. DIFFERENTIAL EQUATIONS OF MATHEMATICAL PHYSICS

IV – 5 2 – 2 –

quations of second order, Green's functions, distributions, Hilbert space, elements c functional analysis, eigenvalues and eigenfunctions with applications to wave opagation, heat flow and boundary value problems.

R. A. Ross

EPARTMENT OF PHYSICS

201. STRUCTURE AND PROPERTIES OF MATTER

I – 1, 2, 3, 4, 6, 7, 8, 9 2 1½ 2 1½

nservation Laws for Particle Systems. Central Forces – Gravitational and Electrical. ermodynamics. Waves – Mechanical and Electromagnetic. Relativity. Quantum eory, the Atom, Complex Atoms. Solid State Physics. The Nucleus, and Nuclear ansformations. Elementary Particles. Text: *Essentials of Physics* – Borowitz and iser.

G. D. Scott, M. Trefler, E. C. West, T. S. Yoon

211. ELEMENTS OF PHYSICS I

I – 5 3 1 2 1

roduction to atomic and nuclear physics. Addition and multiplication of vectors th physical applications. Trajectories of particles. Rotational motion, conservation c angular momentum, moments of inertia, gyroscopes. Non-uniform accelerations, mple harmonic motion, resolution of complex simple harmonic motion. Reaction nematics. Philosophy of conservation laws and symmetries. Gravitational and other ntural forces.

Heat and thermodynamics, the laws of thermodynamics with physical applications. eal gases, kinetic theory, Maxwell-Boltzmann distribution of molecular velocities, ecific heats of monatomic and polyatomic gases. Basic probability notions, postules of statistical physics, entropy, absolute temperature, the canonical distribution.

Crystalline symmetry, elastic behaviour of solids. Dynamics of crystalline lattice specific heats and solids, heat conductivity, thermal expansion.

K. G. McNe

2512. PHYSICS LABORATORY I

I – 5 – 1½ – 1

A loosely structured laboratory with a wide variety of experiments available. Inc viduality and ingenuity are encouraged.

K. G. McNe

2521. ELEMENTS OF PHYSICS II

II – 5 3 1

Principle of relativity, Lorentz transformation, Einstein's special relativity, relativis dynamics, space-time geometry, the electromagnetic field, analysis of a vector fie Matter in electrostatic and magnetostatic fields, electromagnetic field of uniform moving charges, Maxwell's equations, radiation and its detection. Interference electromagnetic waves, Huygen's principle and diffraction. Maxwell's equations the presence of matter.

Classical systems and quantum systems. Wave-particle duality, Heisenberg u certainty principle, electron and nuclear spin. Schroedinger equation. Eigenvalu and eigenfunctions. Transition probabilities. The harmonic oscillator. The hydrog atom. Quantum aspect of electromagnetic radiation, quantum electrodynami Nuclear interactions, stable and unstable nuclei. Elementary particles – their p duction and interactions.

D. G. I

2522. PHYSICS LABORATORY II

5 – 1½ –

A loosely structured laboratory with a wide variety of experiments available. Ir viduality and ingenuity are encouraged.

D. G. I

2531. STATISTICAL PHYSICS

III – 5a, 5cs, 5e, 5g, 5p – –

Kinetic theory of gases. Pressure and energy of a gas. Distribution of velocit Transport phenomena. Review of basic concepts and formulas of thermodynam Statistical mechanics. Classical statistics of Maxwell-Boltzmann. Statistical ther dynamics. Monatomic gas. Equipartition theorem. Specific heat of diatomic ga Quantum statistics: Bose-Einstein and Fermi-Dirac statistics. Laws of radiat Electron gas. Fluctuations. Text: *Thermodynamics, the kinetic theory of gases statistical mechanics* – Sears.

J. C. Stryl

2533. QUANTUM PHYSICS

III – 5a, 5cs, 5e, 5g, 5nt, 5p 2

Schroedinger's theory of quantum mechanics, perturbation theory, one-electron atc magnetic moments, spin and relativistic effects, identical particles, multi-elec

ms. Examples will be taken from atomic physics, molecular physics and to a aller extent nuclear and particle physics. A core course. Text: *Fundamentals of odern Physics* – Eisberg.

E. J. Allin

34. PHYSICS OF SOLIDS AND FLUIDS

III – 5e, 5g, 5m, 5p – – 2 –

nematics of deformable bodies, elasticity, wave propagation, motion of ideal fluids, ential theory, Navier-Stokes equation, similarity.

J. V. Iribarne

37. GEOPHYSICS

III – 5g 2 – – –

ysics of the earth, its atmosphere, magnetosphere; its evolution and processes ing place on it. An outline of the methods utilized in attacking current research oblems is presented.

A. W. Brewer, D. York

38. MOLECULAR AND SOLID STATE PHYSICS LABORATORY

III – 5g, 5nt, 5p – 3 – 3

e student may select a number of experiments in molecular and solid state physics m a list of available ones. The experiments are open-ended. The student may nd more or less time on any particular experiment depending on his interests. ere is no set number of experiments required to obtain credit for the course.

A. D. May

39. NUCLEAR AND PARTICLE PHYSICS LABORATORY

III – 5g, 5nt, 5p – 3 – 3

clear physics experiments and experiments with slow and fast muons from cosmic s are available. The experiments are open-ended. The student may spend more less time on any particular experiment depending on his interests. There is no set mber of experiments required to obtain credit for the course.

A. E. Litherland

40. MOLECULAR AND SOLID STATE PHYSICS LABORATORY

III – 5a, 5e – 3 – –

e student may select a number of experiments in molecular and solid state physics m a list of available ones. The experiments are open-ended. The student may spend re or less time on any particular experiment depending on his interests. There is set number of experiments required to obtain credit for the course. This course he same as 2538 except one term only.

41. NUCLEAR AND PARTICLE PHYSICS LABORATORY

III – 5a, 5e – 3 – –

clear physics experiments and experiments with slow and fast muons from cosmic s are available. The experiments are open-ended. The student may spend more or s time on any particular experiment depending on his interests. There is no set

number of experiments required to obtain credit for the course. This course is t
same as 2539 except one term only.

2542. PHYSICS SEMINAR

IV – 5p 2 –

The students will devise and carry out a seminar course on subjects of interest
them under the direction of a group of staff members. The course will only be giv
if a substantial number of students are interested.

J. M. Daniels, J. D. Prentice (coordinato

2543. STATISTICAL MECHANICS

IV – 5p 2 –

Part I: Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics with appli
tions. Elementary theory of irreversible phenomena.

Part II: Theory of imperfect gases, phase transitions. The Boltzmann equation, fl
tuation theory and correlation functions. Text: *Fundamentals of Statistical and Therm
Physics* – Reif.

J. Van Kranendo

2544. NUCLEAR PHYSICS

IV – 5nt, 5p 2 –

Nuclear forces. The properties of nuclei and their description by means of the sh
model and the collective model. Electromagnetic interaction with the nucleus. We
Interactions. The theory of nuclear reactions. The course will include some ator
and high energy physics in order to emphasize the important connections of b
subjects with nuclear physics. Text: *Nuclear Theory* – Elton; *Nuclear Physics* – F
and Nigam.

D. A. L. Paul, J. Goldenb

2545. QUANTUM THEORY

IV – 5e, 5m, 5p 2 –

Waves and particles, wave packets, uncertainty principle. Schroedinger equati
expectation values, operators, eigenvalues, eigenfunctions, one dimensional proble
Angular momentum, central force problems, Pauli spin theory, identical partic
Pauli principle, applications to atoms and molecules. Zeeman effect. Perturbat
theory, secular equations, time dependent perturbation theory, transition probabilit
Charged particles moving in electromagnetic fields, scattering theory.

J. W. Mo

2546. SOLID STATE PHYSICS

IV – 5m, 5p 2 –

Free electron theory. Scattering from a rigid lattice. Pseudopotentials, band struct
and Fermi surfaces. Electron-electron, interactions. Quasi-particles. Lattice vib
tions. Electron-phonon interaction. Superconductivity. Semiconductors and P
junctions. Diamagnetism and paramagnetism. Ferromagnetism and antiferrom
netism.

P. A. Griffin, E. Faw

47. RELATIVITY THEORY

IV – 5p 2 – 2 –

ecial theory: principle of relativity, Lorentz transformations, Minkowski space, sor algebra. Relativistic particle dynamics, collision theory. Relativistic field theory, drodynamics, Maxwell field, electro-dynamics of material bodies, Klein-Gordon d. General theory: principle of equivalence, general covariance, tensor analysis. nstein equations, Schwarzschild solution, geodesics, gravitational collapse, black es. Geometrodynamics, superspace, quantization of Einstein equations. Cosmology: mological principle, Mach's principle, Robertson-Walker metric, mix master verse.

J. Van Kranendonk

48. CELLULAR BIOPHYSICS

IV – 5p – – 2 –

e emphasis will be on the application of principles from physics, chemistry and etics to quantitative studies in cell biology. Selected areas in biophysics such as ular differentiation, the regulation of macromolecular biosynthesis, and the appli- on of biophysical methods to problems in medicine, will be discussed in detail. t: *Molecular Biology of the Gene* – Watson.

R. A. Phillips

0. PHYSICS SEMINAR

IV – 5nt 2 – – –

students will devise and carry out a seminar course on subjects of interest to n under the direction of a group of staff members. The course will only be given substantial number of students are interested. This course is the same as 2542 pt one term only.

51. QUANTUM OPTICS

IV – 5p – – 2 –

ulated emission. Laser theory. Coherence. Nonlinear optics including harmonic ration, parametric processes, stimulated scattering and self-focussing. Texts: *linear Optics* – Bloembergen; *Lasers* – Lengyel.

A. D. May

2. HIGH ENERGY PHYSICS

IV – 5p – – 2 –

cription of the elementary particles and their decay. Symmetries: charge inde- lence (SU2), strangeness conservation, SU3 and quarks. Notions of scattering ry such as the S-Matrix, partial waves, unitarity, dispersion relations and Regge s. Emphasis will be on the phenomenology. Text: *Elementary Particles* – Frazer.

R. K. Logan

. INTERACTION OF RADIATION WITH MATTER

IV – 5p 2 – – –

rization, diffraction and interference of electromagnetic waves. Holography.

Metal optics. Crystal optics. Dispersion. Width of spectral lines. Electro-optical a magneto-optical effects. Text: *Principles of Optics* – Born and Wolf.

B. P. Stoich

2554. MAGNETIC RESONANCE

IV – 5p – –

Motion of free spins. Macroscopic aspects. Crystal fields and the effective spin Ha iltonian. Magnetic interactions in a rigid lattice. Thermal relaxation in liquids a gases. Thermal relaxation in solids. Electric quadrupole effects. Dynamic nucl orientation. Techniques: NMR, EPR, molecular beams, optical pumping, etc. Tex *Principles of Magnetic Resonance*, by Slichter. *Paramagnetic Resonance*, by Pake.

R. L. Armstro

2555. MOLECULAR PHYSICS

IV – 5p 2 –

Treatment of the spectra of molecules and molecular crystals based mainly on sy metry considerations. Theory of groups and group representations. Born-Opp heimer approximation. Rotation and vibration of diatomic and polyatomic molecul Selection rules. Crystallographic point groups. Rotational and vibrational excito Text: *Group Theory and Quantum Mechanics*, by Tinkham.

R. L. Armstro

2556. SOLID STATE PHYSICS

IV – 5p – –

Description of Crystal Structures. Diffraction of x-rays by crystals, classification solids. Elastic constants of crystals. Lattice vibrations. Thermal properties of soli Dielectric properties. Text: *Introduction to Solid State Physics*, by Kittel.

J. S. M. Har

2557. NUCLEAR AND PARTICLE PHYSICS

IV – 5p 2 –

Important discoveries in nuclear and particle physics. Radioactivity and gross nucl properties. Nucleons, nuclear forces and nuclear structure. Fission and the physi basis of nuclear power. Unstable particles: hadrons, hypernuclei and leptons. To of nuclear and high energy physics: accelerators, modern nuclear detectors. So current research with these tools. Text: *Atomic and Nuclear Physics*, by Shankla

D. B. McCon

2558. STATISTICAL MECHANICS

IV – 5p 2 –

Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics with applications. E mentary theory of irreversible phenomena. Text: *Fundamentals of Statistical Thermal Physics* – Reif.

J. Van Kranend

2559. MOLECULAR BIOPHYSICS

IV – 5p 2 –

The physical and chemical properties of some biologically important macromolecu in relation to their functions. Techniques such as sedimentation, chromatograp

ctroscopy, scattering of photons and electrons. The course is designed to give dents with a physics and chemistry background an insight into the application of exact sciences to the solution of biological problems. Text: *Molecular Biology of Gene*, by Watson.

P. F. Ottensmeyer

0. CLASSICAL PHYSICS OF CONTINUA

IV – 5g 2 – 2 –

alysis of deformation of continuous medium. Stress tensor. Constitutive equations. cosity. Viscoelasticity. Wave motion in continuous media. Viscous hydrodynamics. bility theory. Introduction to theories of turbulence. Text: *Introduction to the chanics of Continua* – Prager.

R. E. Wiggins

1. THEORY AND APPLICATION OF GEOPHYSICAL METHODS

IV – 5g 2 – 2 –

ourse on the mathematical theory of seismic, magnetic electrical and gravitational hods in pure and applied geophysics. Text: *Interpretation Theory in Applied physics*, by Grant and West.

F. S. Grant

8. GEOPHYSICS

IV – 9 2 – 2 –

introduction to the physical principles underlying the important methods of geo- sical prospecting. Particular attention is given to seismic, gravitational, magnetic electromagnetic methods. Text: *Introduction to Geophysical Prospecting*, by rin.

G. F. West

9. GEOPHYSICS

IV – 9 – 3 – 3

boratory course in geophysical prospecting methods.

G. F. West

0. PHYSICS OF THE EARTH

IV – 5g 2 – 2 –

oactivity and age of rocks, tectonics, glaciology, seismology and internal consti- tin of the Earth, gravity and the figure of the Earth, temperature and thermal ry, geomagnetism and physics of the upper atmosphere, mechanical properties e Earth's interior.

G. D. Garland

7. ATMOSPHERIC PHYSICS

IV – 5g 2 – 2 –

orological measurements, radiation, atmospheric statics and conditions for equi- m, atmospheric thermodynamics, equations of motion, synoptic charts, the al circulations, condensations, condensation physics, atmospheric electricity.

Wind structure near the ground evaporation, the stratosphere. Text: *Dynamic a*
Physical Meteorology, by Haltiner and Martin.

A. W. Brew

2573. GEOPHYSICS LABORATORY

IV – 5g – 9

A laboratory course stressing experimental and mathematical techniques applica
to the geophysical sciences.

R. M. Farqul

DEPARTMENT OF CHEMISTRY

2631. ATOMIC AND MOLECULAR STRUCTURE

III – 5c 2 –

The application of wave mechanics to some problems of atomic and molecu
structure.

J. P. Vall

DEPARTMENT OF POLITICAL ECONOMY

2720. ECONOMICS

II – All courses 2 –

An introduction to the study of Economics with special reference to the problem
the Canadian economy. Those students who obtain a satisfactory term mark will
be required to write the final examination. This course has equivalent value
Economics 100 as a pre-requisite for advanced courses in Economics.

J. P. Wa

2734. ACCOUNTING

III – 4 2 –

Basic accounting principles and procedures, the preparation and interpretation
financial statements, cost accounting, and the use of accounting as a means of con

DEPARTMENT OF GEOLOGY

2900. GEOLOGY FOR ENGINEERS

II – 1 –

An introductory course in geology with special reference to engineering problems

2901. X-RAY CRYSTALLOGRAPHY

III – 5m, 8 –

A laboratory course in X-ray diffraction methods for students in Metallurgy
Material Science.

E. W. Nu

0. PRINCIPLES OF GEOLOGY

II – 9 2 3 2 3
III – 5g 2 2 2 2

ic concepts of physical and historical geology.

J. B. Currie, G. Norris

1. MINERALOGY

II – 9 2 4 2 4

oductory crystallography; the principle of mineralogy; classification and description he common minerals; optical theory; the use of the polarizing microscope in the y of minerals; introduction to the study of rocks.

D. H. Gorman, J. C. Rucklidge

2. GEOLOGICAL DATA PROCESSING BY COMPUTER

II – 9 1 2 1 2

lied mathematics, probability, and statistics for processing geological data using puter methods.

F. G. Smith

0. PETROLOGY

II – 9 2 2 2 2

principles of petrology; the classification, description and interpretation of the nentary, igneous and metamorphic rocks. Microscopic petrography. One laboratory report.

J. J. Fawcett

. STRATIGRAPHY AND SEDIMENTATION

III – 9 2 2 2 2

ciples of stratigraphy with emphasis on tectonic and environmental interpretation recambrian and younger rocks. Problems of applied stratigraphy; petrographic pretation.

F. W. Beales, A. M. Goodwin

. TECTONICS

III – 9 1 3 1 3

metry of existing deformational structures in the earth's crust, and reconstruction eir mechanical development.

W. M. Schwerdtner

. MINERAL IDENTIFICATION LABORATORY

III – 9 – 2 – 2

ntinuation of the laboratory work in mineralogy of course 2921.

D. H. Gorman

2935. PHYSICAL GEOCHEMISTRY

III – 9 3 – 3

Chemical thermodynamics, phase diagrams, electrochemistry, states of matter, kineti with examples from natural and experimental mineral systems at a wide range temperatures and pressures.

G. M. Anderson, S. D. Scott, F. G. Sm

2937. GEOLOGICAL FIELD TRIPS

III – 9

Field trips to places of geological interest during the fall to complement the subje studied in the III Year.

The Staff in Geolo

2940. MINERAL DEPOSITS

IV – 9 2 3

Systematic mineralogy and phase equilibria of ore minerals. Identification of ore mi rals in polished section. Geochemistry of ore-forming processes. Description of i portant ore deposits and discussion of their genesis.

A. J. Naldr

2941s. PETROLEUM AND GROUND WATER GEOLOGY

IV – 9 2 3

Occurrence of oil and gas in sedimentary basins and the geological conditions t govern their entrapment; ground water and its relation to the geology of drain basins; fluid flow through porous media.

J. B. Currie, W. D. Bai

2943. EXPLORATION GEOCHEMISTRY

IV – 9 1 3

Use of trace element analysis techniques as an aid to discovery of ore deposits.

G. M. Ander

2944. MINERAL EXPLORATION

IV – 9 2 –

Case histories in mineral exploration, development and exploitation.

Staff in Geol

2946. GEOLOGY FIELD CAMP

IV – 9 14

A field course in the Tweed area of Ontario immediately following the Annual Ex inations between the Third and Fourth Years.

The Staff in Geo

2947. GEOLOGICAL FIELD TRIPS

IV – 9

Field trips to places of geological interest to complement the subjects studied in IV Year.

The Staff in Geo

EPARTMENT OF COMPUTER SCIENCE

10s. INTRODUCTION TO COMPUTER PROGRAMMING

I – 5 – – 1 1

roduction to algorithms and stored-programme computers; FORTRAN programming; lications to numerical and non-numerical problems; simulations.

The Staff in Computer Science

0. COMPUTER LANGUAGES

II – 5 – – 2 –

inition of various programming languages including procedure oriented, list cessing and simulation languages. Specification of syntax and semantics. Basic perties of programming languages.

8s. PROGRAMMING AND DATA STRUCTURES

III – 5cs – – 3 6

embly Language Programming. Data structures with examples. Assemblers and ro-assemblers. Simple grammars and their recognition and translation.

9. SYSTEMS PROGRAMMING AND PROGRAMMING LANGUAGES

IV – 5cs (commencing 1971–72)

her level languages, with examples of programming, recognition, and translation. slator writing systems. Operating system principles, with emphasis on system citecture and design, and system services. Sorting and other commercial applions.

s. COMPUTER ORGANIZATION

III – 5cs; IV – 5cs 2 2 – –

puter Structure, machine language, instruction execution, addressing techniques, digital representation of data. Computer system organization, hierarchy of ory storage devices, logic design, microprogramming and emulators. Symbolic assembly systems, macro definition and generation, program segmentation and ge. Some case studies of actual machines to illustrate various architectures. course is for the session 1970–71 only. It will be replaced in 1971–72 by Sys- Programming and Programming Languages 3339.

4s. THEORY OF COMPUTABILITY

IV – 5cs 2 – – –

positional calculus, predicate calculus, formal systems, primitive-recursive func- Godel numbering and theorems, recursive functions, recursive sets. Turing ines, unsolvable problems, universal Turing machines, hierarchies of functions, utational complexity.

3343s. AUTOMATA THEORY

IV – 5cs --

Finite automata, sequential machines, regular sets, regular expressions, generat grammars, context-free grammars and push-down automata, context-sensitive gra mars and linear-bounded automata, operations on languages, bounds for recogniti decision problems, unified theory of automata.

3344s. OPERATING SYSTEMS

IV – 5cs --

Process control, multiprogramming, generalized addressing, multiprocessing, para computations. Protection schemes. Resource allocation, static and dynamic scheduli Dynamic storage allocation, paging. Memory management, page traffic. Reliabil debugging tools, error tolerance.

SPECIAL LECTURERS

3440. ENGINEERING LAW

IV – 3, 4 1

A subject designed to co-ordinate the practice of engineering and law. Considera is given to the characteristics, advantages and disadvantages of companies, part ships and sole proprietorships, the promotion, organization and financing of compa the duties of employees to employers, the duties and liabilities of engineers, stat applicable to engineering works, professional engineering associations, construc contracts, workmen's compensation, trade unions and industrial disputes. Textb *Engineering Law* – Laidlaw, Young, and Dick.

W. O. Chris. M

SCHOOL OF ARCHITECTURE

3540s. URBAN AND REGIONAL PLANNING

III – 1 (elective); IV – 1 (elective) -

Spatial distribution of land use related to physical, ecological and transport factors. Economic alternatives for the selection of industrial, residential and re tional location. Land use planning concerning natural resources, resource pote and conservation. Legal aspects of planning. Mathematical modelling and opti tion of land use. (To be offered jointly by the Departments of Urban and Reg Planning and Civil Engineering.)

I General Regulations; Examinations

ENDANCE

. Students proceeding to the degree are required to attend the courses of instruc- and the examinations in all subjects prescribed. A student whose attendance at ures or laboratories, or whose work, is deemed by the Council of the Faculty to be tisfactory may have his registration cancelled at any time.

Students must conform to all lecture room and laboratory regulations. Reports, fs, theses and drawings become the property of the Council to dispose of as it may fit. Drawings, briefs and field notes will not be accepted unless they have been e at the time and place provided in the time table.

ALTIES FOR UNSATISFACTORY WORK

In the case of unsatisfactory work of a very serious nature, the Faculty Council recommend to the Senate that a student be debarred from the University.

A student who on two occasions has failed to obtain promotion to a higher year be refused further registration in the Faculty. A failure in engineering or in a ed course at another institution will be counted in the same way as a failure in Faculty.

A student whose work is unsatisfactory may be suspended from attendance by Council of the Faculty for a period of time not exceeding two years and/or until atisfaction of other conditions as it may see fit.

A student who withdraws after February 15, or who does not withdraw but does vrite the annual examinations, will be regarded for the purposes of these regula- ns as having failed his year.

ALS

udent wishing to appeal to the Senate against a decision of the Council of the lty should consult the Secretary of the Faculty or the office of the University trar about the preparation and submission of his petition to the Secretary of the e.

ANNUAL EXAMINATIONS

1. Annual examinations will be held in April except as provided in paragraph below.

2. Annual examinations will be held at the end of the first term in subjects co pleted during the first term.

3. Promotion from one year to another is made on the basis of the studer weighted average in the annual examinations and laboratory and other term wo In the calculation of the student's average the results of each course carry the wei indicated in the tables of curriculum. (See Section VI.)

Pass standing and promotion to the next higher year will be granted to stude who obtain a weighted average of 60% or greater in the work of the year. (For s cial requirements in the first year of Engineering Science, see page 37.)

4. The student's work is graded in the following manner:

On Individual Courses

Marks	Grade
80 – 100%	1
70 – 79%	2
60 – 69%	3
50 – 59%	4
Below 50%	5

5. Honour standing will be granted to students who obtain a weighted average 75% or greater in the work of the year.

6. Honour graduate standing will be granted to students who obtain honours in final year and in any one previous year.

7. The following regulations pertain to failure and repetition of a year:

(*a*) A student who fails may be permitted to repeat the work of a year, subject the conditions set out in the following paragraphs of this section.

(*b*) Only one such repetition will be allowed in the student's entire undergradu course. For the purpose of this regulation, a failure in engineering or in a rela course at any other institution will be counted in the same way as a failure in Faculty.

(*c*) A student repeating a year must take the full program of instruction.

(*d*) A student who fails in the Second, Third or Fourth Year may repeat the w of the year in the session immediately following, unless he has previously repeate year or is for other reasons ineligible.

(*e*) A student who has been admitted to advanced standing and who fails in first year of attendance must file an application for re-admission, following the p cedure outlined in Section III, paragraph 6 of this calendar.

(*f*) A student who fails in the work of the First Year may apply for re-admiss to the Faculty, subject to the conditions set out below. *Applications of students*

admission to the First Year will be considered on their merits, in competition with other applicants.

(i) A student who fails in the work of the First Year but who has obtained an average of 50% or over may apply for re-admission in the session immediately following.

(ii) A student who fails in the work of the First Year with an average lower than 50% may not apply for re-admission until one full session has elapsed.

(iii) A student who withdraws on or before February 15 may apply for re-admission in the session immediately following.

(iv) A student who withdraws after February 15, or who does not withdraw but does not write the final examinations is considered to have failed, and may not apply for re-admission until one full session has elapsed.

(v) Application for re-admission is made to the Office of Admissions on the regular admission application form, as outlined in Section III, paragraph 6, of this calendar.

9. A student should submit to Council immediately after its occurrence, evidence of any illness or mishap which occurs during the session; any petition for leniency on account of such incidents may be refused consideration if received after the third day following the last day of examinations.

10. A student will not be allowed to write any examinations if he has not paid all fees and dues for which he is liable at that time.

TERM EXAMINATIONS

Term examinations may be held in any subject and at any time at the discretion of the instructor, or by the order of the Council, and the results of such examination may be incorporated with those of the annual examinations in the same subjects.

EXTRA-CURRICULAR ACTIVITIES AND ACADEMIC CREDIT

It is in general desirable for students to engage to a reasonable extent in extra-curricular activities in order that they may not become too narrowly professional in interests and outlook, but it will be obvious that no academic credit or consideration can be given for such activities. Some offices in student organizations require quite large amounts of time for the proper performance of the duties connected with them, and it is therefore strongly recommended that students, particularly those whose academic records are not high, consult a senior member of staff before allowing themselves to be nominated for such offices.

TRANSFER OF PROGRAM

An undergraduate student who wishes to transfer from one program to another within the Faculty must petition to the Faculty Council and obtain its approval. Petitions for transfer of program must be submitted not later than July 15.

VIII

Medals, Prizes Scholarships and Bursaries

Through the generosity of friends of the University, governments and commercia organizations, encouragement has been given to undergraduate work in the variou branches of engineering study by the establishment of the scholarships, prizes, bursa ries and medals listed in the following pages.

ADMISSION SCHOLARSHIPS AND BURSARIES

Ontario Students:

Scholarships and bursaries available to students entering the First Year are listed o pages 133 and 134. For full details concerning these awards, applicants should consu the Calendar of Admission Awards, which is available at Secondary Schools or fro the Office of Student Awards, Simcoe Hall, University of Toronto. Applications, whic must be made through the Principal of the Secondary School, close on May 1 annuall

Non-Ontario Students:

All non-Ontario students should apply to the Office of Student Awards, Simcoe Hal University of Toronto. A limited number of scholarships is reserved for students livin outside the Province of Ontario, but as competition is keen such students must n count on receiving assistance but are advised rather to ensure that they have sufficie funds from their own government or from private sources to cover all probabl expenses.

IN-COURSE SCHOLARSHIPS AND BURSARIES

Scholarships, prizes, bursaries and loans available to students in attendance in th Faculty are listed on pages 134 to 137. Where it is necessary to make application fo an award it is so stated in the description and particulars are given as to how the ap plication should be made. In all other cases the award is made on the recommend tion of the Faculty Council and no application is necessary.

GENERAL TERMS AND CONDITIONS

In order to be eligible for a medal, prize, scholarship, bursary, fellowship or othe award granted solely upon standing obtained at an annual or special examination o

on an essay, or term work, or other academic rating, a candidate must obtain nours at such annual or special examination or upon such essay, term work, or other ademic rating unless the terms of the award specify that standing lower than hon- rs may be accepted.

When an award or medal is granted upon standing obtained on part of the work of y academic year the candidate must obtain standing but need not obtain honours in e work of the academic year as a whole, provided he obtains honours in the part ncerned, unless the terms of the award or medal specify otherwise.

No medal, prize, scholarship, bursary, fellowship or other award will be granted to candidate who is conditioned in any subject at an annual examination unless the ms of the award or medal specify otherwise.

A candidate will not be permitted to receive more than one award in a session un- s the statute establishing each of the awards concerned or the Calendar specifies erwise. Only one of those marked by an asterisk may be held in any one year. A ndidate who would, but for this provision, have received more than one award may ve his name so published in the class lists.

A candidate who has spent two sessions in any year of an undergraduate course is t eligible to compete for any award at the annual examinations of that year.

Medals, after they have been suitably engraved, will be given without delay to the nners or forwarded to them by registered mail.

Awards granted to members of graduating classes other than awards for graduate dy and research, will be paid in one instalment as soon as possible after the grant- g of the awards.

All other awards will be paid (i) if of the value of $100 or less, in one instalment November 20 and (ii) if of the value of more than $100 in two equal instalments, first on November 20 and the second on January 20, in the session following the nting of the awards. Payment will be made only if the candidate is in regular at- dance in the Faculty and, if the Calendar so specifies, in the course in which the ard is established or granted.

The Senate may, on the recommendation of the Faculty, permit a candidate to om an award has been granted to postpone attendance upon lectures and labora- y classes for one year. Further postponement may be permitted on application.

NOTE – As the value of an endowed scholarship or prize is dependent on the actual ome of the fund, it is possible that the value of certain scholarships and prizes at e time of payment may be greater or less than the amount stated in the calendar. In those cases where the amount of the award is not payable from income earned an endowed fund, payment will be dependent on the receipt of the amount of the nual award from the donor.

AILABLE TO STUDENTS ENTERING THE FIRST YEAR

(*indicates that application is required*)

Alumni Association War Memorial Scholarships † $ 500 page 162

Alcan Scholarship	†	$ 500	page 1
J. P. Bickell Foundation Scholarships	†	$ 500	1
J. W. Billes Admission Scholarships	†		1
Children of War Dead Education Assistance	†		1
Dominion Magnesium Limited Bursary	†	$ 400	1
Engineering Alumni Admission Scholarships (7)	†	$1000	1
Grabill Admission Scholarship	†	$ 500	1
Hagarty Memorial Scholarship	†	$ 60	1
The Murray Calder Hendry Scholarship	†	$ 500	1
Roy Jarvis Henry Admission Scholarships (3)	†	$ 500	1
International Nickel Scholarship	†	$ 300 + Fees	1
The Leonard Foundation Scholarships	†		1
J. Edgar McAllister Foundation	†		1
John Wolfe McColl Awards	†		1
Lachlan Dales McKellar Admission Scholarships (2)	†	$ 500	1
O.H.A. War Memorial Scholarship	†	$ 200	1
Ontario Chapter American Society for Metals Bursaries	†	$ 150	1
Ontario Student Awards Program	†		1
A.P.E.O. Admission Scholarship	†	$ 500	1
Regular Officer Training Plan	†		1
Helen E. Rogers Admission Scholarships	†		1
Simpson-Sears Limited (Northern Ontario) Scholarship	†	$ 100	1
Walter Sterling Admission Scholarships	†		1
U.T.S. Engineering Scholarship	†	$ 250	1
Wallberg Admission Scholarships (2)	†	$ 500	1

AVAILABLE TO STUDENTS COMPLETING THE FIRST YEAR

(† *indicates that application is required*)

Baptie Scholarship		$ 175	1
Canadian Bechtel Limited Bursaries	†		1
J. P. Bickell Foundation Scholarships			1
T. H. Bickle Prize		$ 30	1
Crocker Foundation Bursaries	†		1
John M. Empey Scholarship		$ 170	1
I.B.M. – Thomas J. Watson Memorial Bursary Fund	†		1
Johnson's Wax Scholarship		$ 800	1
Kimberly-Clark Scholarship		$ 500	1
John Wolfe McColl Awards	†		1
Garnet W. McKee-Lachlan Gilchrist Scholarship in Engineering Science		$ 110	1
MacLennan – MacLeod Memorial Prize		$ 25	1

cLennan – MacLeod Memorial Prize		$ 25	page 153
Iarsland Engineering Ltd. Scholarship		$ 250	153
tario Student Awards Program	†		144
nda Limited Scholarship		$ 500	155
ilin Memorial Scholarship		$ 475	155
cter and Gamble Bursary	†		155
rofessional Engineers Scholarship		$ 250	156
nsom Scholarship in Chemical Engineering		$ 250	156
derick W. Schumacher Scholarship	†		159
Ubukata Fund	†		162
allberg Undergraduate Scholarships (2)		$ 500	163

ILABLE TO STUDENTS COMPLETING THE SECOND YEAR

indicates that application is required)

rvey Aggett Memorial Scholarship		$ 75	138
lagh Scholarship		$ 350	139
tomotive Transport Association Bursary	†		139
b Bursary Fund	†		140
adian Bechtel Limited Bursaries	†		140
. Bickell Foundation Bursaries	†		141
. Bickell Foundation Scholarships			140
H. Bickle Prize		$ 30	141
veth Metallurgical Ltd. Bursary	†	$ 500	142
cker Foundation Bursaries	†		144
namid of Canada Scholarship		$ 900	144
n M. Empey Scholarship		$ 170	145
A. Findlay Scholarship		$ 80	146
gh Gall Award	†	$ 140	147
dro-Electric Power Commission of Ontario Bursary	†	$ 500	149
M. – Thomas J. Watson Memorial Bursary Fund	†		149
nberly-Clark Scholarship		$ 500	150
cholarships			151
rles Gordon Manning Prize			153
*larsland Engineering Ltd. Scholarship		$ 250	153
es L. Morris Memorial Prize		$ 125	154
tario Student Awards Program	†		144
nda Limited Scholarship		$ 500	155
*ruce Falls Power and Paper Company Scholarships		$ 400	160
liam Storrie Memorial Scholarship		$ 100	161
*rofessional Engineers Scholarship		$ 250	156
*hodes Scholarship	†	£1000	156
derick W. Schumacher Scholarship	†		159

Edith Tyrrell Memorial Bursary	†	$ 600	page 16
Wallberg Undergraduate Scholarships		$ 500	16
William R. Worthington Memorial Scholarship		$ 400	16

AVAILABLE TO STUDENTS COMPLETING THE THIRD YEAR

(† *indicates that application is required*)

American Institute of Industrial Engineers Scholarship		$ 150	13
Babb Bursary Fund	†		14
F. W. Baldwin Prize		$ 75	14
Canadian Bechtel Limited Bursaries	†		14
J. P. Bickell Foundation Bursaries	†		14
T. H. Bickle Prize		$ 30	14
*Boiler Inspection and Insurance Company Scholarship		$ 300	14
*Chevron Standard Limited Scholarship		$ 500	14
Chemical Institute of Canada Prize		$ 25	14
5T6 Civils Scholarship	†	$ 200	14
Cominco Scholarships	†	$ 800	14
Crocker Foundation Bursaries	†		14
Dow Chemical of Canada Limited Award		$ 500	14
John M. Empey Scholarship		$ 170	14
E.I.C. Prize		$ 50	14
Engineering Society Semi-Centennial Award		$ 75	14
J. A. Findlay Scholarship		$ 80	14
James Franceschini Foundation Scholarship		$ 300	14
Chester B. Hamilton Scholarship		$ 500	14
I.B.M. – Thomas J. Watson Memorial Bursary Fund	†		14
*Jenkins Scholarship in Engineering		$ 200	14
Loan Funds	†		14
J. A. D. McCurdy Prize		$ 75	15
Alexander MacLean Scholarship		$ 250	15
*Marsland Engineering Ltd. Scholarship		$ 250	15
Ontario Student Awards Program	†		15
Orenda Limited Scholarship		$ 500	15
*Professional Engineers Scholarship		$ 250	15
RCE Memorial Scholarship	†	$ 125	15
Don Salt Memorial Scholarships	†	$ 500	15
Murray F. Southcote Scholarship		$ 100	15
Frederick W. Schumacher Scholarship	†		15
William Storrie Memorial Scholarship		$ 100	15
*Spruce Falls Power and Paper Company Scholarships		$ 400	15
Edith Tyrrell Memorial Bursary	†	$ 600	15
Wallberg Undergraduate Scholarships		$ 500	15

AILABLE TO STUDENTS COMPLETING THE FOURTH YEAR

indicates that application is required)

nry G. Acres Medal			page 138
nerican Society of Lubrication Engineers Prize		$ 75	139
P. Bickell Foundation Bursaries	†		140
bb Bursary Fund			140
ocker Foundation Bursaries	†		144
ctrical Manufacturing Co. Limited Prize		$ 25	145
milton Watch Award			148
an Funds	†		164
ssey-Ferguson Ltd. Scholarships (2)	†	$ 500	154
tario Student Awards Program	†		144
o Holden Scholarship		$ 750	154
fessional Engineers Gold Medal			156
E. Reid Memorial Prize		$ 50	157
liam Storrie Memorial Scholarship		$ 200	161
llace Award, Society of Automotive Engineers Prize		$ 100	160
iety of Chemical Industry Merit Award			160
cond Mile Engineer" Award		$ 200	159
S. Wilson Medals			163

HENRY G. ACRES MEDAL

The Henry G. Acres Medal is the gift of Mrs. Henry G. Acres in memory of her l husband, Henry G. Acres, M.E., D.Sc., a graduate of the School of Practical Scie in the class of 1903. Throughout his professional life Dr. Acres was associated w major power developments in Canada and abroad. As chief hydraulic engineer for t Hydro-Electric Power Commission of Ontario in the period 1911 to 1923, he w responsible for the design and construction of nearly twenty power plants, includi the Queenston-Chippewa development. Entering private practice in 1924, and until death in 1945, he continued to widen and extend his interests. He became chief en neer of the Grand River Conservation Commission and responsible for the design a construction of the Shand dam and related work. Later, he was consulting engin for the extensive power developments at Shipshaw on the Saguenay River, which v vital to the production of aluminum for war purposes. Many of the provinces of C ada sought his services and he advised with respect to work in Newfoundland, So America and India.

This medal is awarded annually to the student in the Fourth Year who is registe in the course in Civil, Mechanical, or Electrical Engineering, and who obtains highest aggregate percentage at the annual examinations of the Third and Fou Years, provided always that the student obtains honour standing in the examinati of the Fourth Year. Receipt of the medal does not preclude a student from be granted such other award as may in the opinion of the Council be appropriate.

HARVEY AGGETT MEMORIAL SCHOLARSHIP

This scholarship was donated by the late Mr. J. T. Aggett, of Toronto, as a perpet memorial to his son, the late Lieutenant Harvey Aggett, who enlisted in March, 19 during his second year in this Faculty, and was killed in action at Passchendaele November 6, 1917.

This annual scholarship of the value of the annual income from the fund is to awarded to a student of the Second Year in this Faculty who, obtaining honours being one of the first three in his year by his standing at the annual examinations, been adjudged highest of the three in general student activities and service in University during his period of attendance. When regulations do not permit the win to hold this scholarship the students to be considered for the award shall be the three in the year exclusive of any student who holds a scholarship of higher valu

ALCAN SCHOLARSHIP

The Aluminum Company of Canada, Limited, has made available an admis scholarship of a value of $500 to a student entering the First Year of an Hon Course in the Faculty of Arts and Science, the Faculty of Applied Science and E neering or in the Faculty of Law. The recipient must attain an academic stan satisfactory to the Committee of Award and demonstrate financial need. It is ten in the later years provided First Class standing is maintained. As the award is

e for a possible four years and only one shall be outstanding in any year, the xt Alcan Scholarship will become available in the session 1973–74.

Application should be made to the Office of Student Awards by May 1 on the ular Admission Scholarship Application form.

ERICAN INSTITUTE OF INDUSTRIAL ENGINEERS SCHOLARSHIP

Te Southern Ontario Chapter, American Institute of Industrial Engineers offers a olarship of $150 to a student entering the Fourth Year of the Industrial Engineer- course who has consistently maintained a high academic standing, but not neces- ily honour standing, during the previous three years.

ERICAN SOCIETY OF LUBRICATION ENGINEERS PRIZE

Te Toronto section of the American Society of Lubrication Engineers offers an an- l prize of $75 to a student in the Fourth Year in Mechanical Engineering whose Tesis dealing with Lubrication is considered by the Head of the Department of chanical Engineering to be of suitable quality and the most satisfactory. The Prize saccompanied by a donation of $25 to the Department to purchase books on brication.

TARIO CHAPTER, AMERICAN SOCIETY FOR METALS BURSARY

Te Ontario Chapter, American Society for Metals provides several bursaries of a value o $150 each for students entering the First Year in Metallurgy and Materials Science. Te award is made primarily on Grade XIII standing but the need for financial assist- e is also taken into consideration.

Application should be made by letter to the Secretary not later than September 1. Te first award was made for the Session 1958–59.

AGH SCHOLARSHIP

Te Ardagh Scholarship, of the annual value of the income from $7,500, has been ovided in memory of his parents by Professor E. G. R. Ardagh, B.A.Sc., F.R.S.C., merly professor of Applied Chemistry in the Faculty. It is awarded to the student wo attains the highest standing in all Honours at the annual examination of the Second Year in the Course in Chemical Engineering. The first award was made on the results of the annual examination of 1946.

A TRUCKING INDUSTRY EDUCATIONAL FOUNDATION BURSARIES

Te Automotive Transport Association of Ontario has established a bursary fund for udents in the second or higher years of any undergraduate degree course who find themselves in serious financial need due to sudden, unexpected personal or family difficulties. Applications may be submitted to the University Registrar at any time during the session and the number and value of the bursaries will vary at the discre- tio of the Committee of Award.

THE BABB BURSARY FUND

Bursaries from this fund are available to students in any year of the Aeronautics Op tion in Engineering Science. Application is made through the Secretary of the Facult

THE F. W. BALDWIN PRIZE

The F. W. Baldwin Prize of a value of $75 was established by the trustees of a fun created by the members of the Number 3 Squadron, University Air Training Cor (1941–44), in memory of Frederick Walker "Casey" Baldwin, a graduate of th School of Practical Science, who made a significant contribution in the field of Aer nautics in Canada; and who flew, on March 12, 1908, near Hammondsport, N.Y the "Redwing," the first biplane built by the Aerial Experiment Association.

It is awarded annually to the student registered in Third Year, Aeronautics Optio in Engineering Science, who, taking honours, ranks highest in the annual examinatio of Third Year in "structural subjects."

The first award was made on the results of the examinations of the Session 1953–5

BAPTIE SCHOLARSHIP

The Baptie Scholarship is derived from a bequest under the will of the late Mr Margaret W. Baptie, of Ottawa, and the Board of Governors has directed that scholarship of one half the annual income shall be awarded annually to an engineeri student on the record of the first Year. The Board of Governors also authorizes remission of fees in the case of the holder of the scholarship, up to $75.

The conditions of the award are as follows: That the scholarship be awarded to th student who, in the annual examinations of the First Year, enrolled in any one of th courses of Civil Engineering, Mechanical Engineering, Chemical Engineering, Ele trical Engineering, or Metallurgy and Materials Science, obtains the highest aggrega percentage of marks in those subjects which are common to the First Year curricu of those courses. The first award was made on the results of the annual examinatio of the Session 1925–26.

CANADIAN BECHTEL LIMITED BURSARIES

Canadian Bechtel Limited has established Bursaries in the Faculty of Applied Scien and Engineering of an annual value of $1,200 to provide not more than four awar each of a minimum value of $200 and a maximum value of $600. Two awards will made to First Year students and one or two awards to students registered in any ye of the Faculty. Applicants must demonstrate financial need and have academic standi satisfactory to the Faculty Council.

Application must be made to the Secretary of the Faculty on or before October

J. P. BICKELL FOUNDATION SCHOLARSHIPS

The Trustees of the J. P. Bickell Foundation have established scholarships, the numb

o be determined annually, in the Faculty of Applied Science and Engineering of a ossible value of $1,500 payable $500 in the First Year and provided honours are btained at the Annual Examinations, $500 in the Second and Third Years.

An applicant must obtain an average of at least 75% at the Ontario Grade XIII xaminations immediately preceding his admission to the university and must undertake o enrol in Chemical Engineering, Metallurgy and Materials Science or Geological ngineering. Failing suitable candidates in the courses mentioned students registered n the Second Year Honour course in Geological Sciences, or Physics and Geology in the aculty of Arts and Science who are academically qualified are eligible. These awards re of the same value and are tenable in the Second, Third and Fourth Years of the ourse, subject to maintenance of the required academic standing. If any scholarships re not awarded to those mentioned above, students registered in the Third Year of ne Engineering Science course in the Faculty of Applied Science and Engineering nd taking the Physical Metallurgy or the Geophysics option who are academically ualified are eligible. In this case the scholarship will have a value of $1,000, payable 500 in each of the Third and Fourth years, provided the required academic standing maintained.

Applications from those entering First Year must be submitted to the Office of tudent Awards not later than May 1 on the regular admission scholarship applica- on form. In other cases, applications are not required.

. P. BICKELL FOUNDATION BURSARIES

he Trustees of the J. P. Bickell Foundation have established the J. P. Bickell Foun- ation Bursaries in the Faculty of Arts and the Faculty of Applied Science and ngineering. An applicant must be enrolled in Honour Science or in Mathematics, hysics and Chemistry in the Faculty of Arts, in which case he must undertake to udy mining or geology in his higher years; or be enrolled in a higher year of an onour course in the geological or geophysical field in the Faculty of Arts; or be nrolled in Chemical Engineering, Mining Engineering, Metallurgy and Materials cience, or Geological Engineering in any year of the Faculty of Applied Science nd Engineering. He must demonstrate financial need and have satisfactory academic anding.

Application must be made to the Office of Student Awards on or before October 5.

HE T. H. BICKLE PRIZE

he T. H. Bickle Prize is the gift of Mr. and Mrs. E. W. Bickle in memory of their on, T. H. Bickle, an undergraduate of Trinity College and a member of the Senior ntercollegiate Swimming Team at the time of his death in 1937. The income from he endowment fund will be used to purchase a suitable prize to be awarded annually o a member of the Senior Intercollegiate Swimming Team of this University in any ear, faculty or school. The Committee of Award shall consist of the Dean of the

Faculty of Arts, the University Registrar, the Director of Athletics, and the Honorary Coach of Swimming. In awarding the Prize the Committee shall consider the character, scholarship, and general interests of the members of the team.

J. W. BILLES ADMISSION SCHOLARSHIPS

Admission scholarships have been established from a bequest from the estate of J. W. Billes, open to students entering any degree course in the University. The value in each year is a minimum of $250 and a maximum of $1,500 dependent upon the financial need of the recipient. Applicants must satisfy the normal admission scholarship standards in their Grade XIII examinations to be eligible for an award and maintain first class honour standing to enjoy the scholarship in higher years. The number of scholarships awarded in any one year may be varied dependent upon the available funds.

Application should be made to the Office of Student Awards by May 1 on the regular admission scholarship application form.

BOILER INSPECTION AND INSURANCE COMPANY SCHOLARSHIP

The Boiler Inspection and Insurance Company of Canada offers a scholarship in the Course in Mechanical Engineering of the value of $300 to the student who obtains highest honour standing in the regular examinations of the Third Year.

The successful candidate will be expected to proceed to his Fourth Year during the session next following the date of the award.

The amount of the award will be credited by the Chief Accountant to the fees of the Fourth Year of the successful candidate.

CHEVRON STANDARD LIMITED SCHOLARSHIP

Chevron Standard Limited has presented a scholarship of $500 to a student who achieves outstanding results in the annual examinations of the Third Year in the Geophysics Option in Engineering Science or in Geological Engineering in the Faculty of Applied Science and Engineering or in Physics and Geology or Geological Sciences in the Faculty of Arts and Science.

The awards alternate annually between the Faculties of Applied Science and Engineering and Arts and Science and the First Award was made in the session 1960–61 in the Faculty of Applied Science and Engineering.

CARVETH METALLURGICAL LTD. BURSARY

Carveth Metallurgical Ltd. provides one or more bursaries to a total value of $500 for students entering the Third Year of Metallurgy and Materials Science. The award is made primarily on the basis of Second Year standing, but the need for financial assistance will also be taken into consideration.

The Bursary is available every third year, beginning in the Session 1961–62, and

o be awarded on the recommendation of the Department of Metallurgy and Materials cience. Applications should be made by letter to the Secretary of the Faculty of Applied Science not later than September 1 of the year in which the award is tenable.

HEMICAL INSTITUTE OF CANADA PRIZE

he Chemical Institute of Canada offers a prize of the annual value of $25 in books o the student registered in the course in Chemical Engineering who, having obtained onours, receives the highest standing in the written and laboratory work of the Third ear.

The first award was made on the results of the final examinations of 1947.

HILDREN OF WAR DEAD (EDUCATION ASSISTANCE) ACT

hildren of War Dead (Education Assistance) Act provides fees and monthly allowances for children of veterans whose death was attributable to military service. Enquiries should be directed to the nearest District Office of the Department of Veterans ffairs.

T6 CIVILS SCHOLARSHIPS

he 5T6 Civils, consisting of the graduating members of the 1956 Civil Engineering lass of the University of Toronto, have established an annual scholarship of the alue of $200.00 open to students who have completed the Second Year of the ourse in Civil Engineering and are registered in the Third Year of the course. The lection of the recipient is based on evidence of the qualities of scholarship, leadership and character. The award is not tenable with any other scholarship of greater alue.

The award is presented at the annual reunion of the Class of 5T6 Civils. The first ward was made in 1964.

Students who wish to be considered for this scholarship should write to the Class of T6 Civil Engineering, c/o Alumni House, University of Toronto, not later than ecember 31, giving full particulars of their academic record, and their extra-curricular tivities both within and outside the University.

OMINCO SCHOLARSHIPS

wo scholarships, of an annual value of $800 each, are provided by Cominco Limited d are offered to students in the Third Year of the courses in Chemical Engineering, eological Engineering, Mechanical Engineering and Metallurgy and Materials Science the Faculty of Applied Science and Engineering and to students in the Third Year the courses in Chemistry and Geology in the Faculty of Arts and Science, the wards being made on the basis of the examination results of the Seecond Year. The holarships may be renewed in the Fourth Year if satisfactory standing is maintained.

Application must be made to the Secretary of the Faculty on the regular in-course wards form not later than October 15.

CROCKER FOUNDATION BURSARIES

The income from a capital fund established from the estate of the late Beatrice Crocker Glazier in memory of her brother, James William Crocker, provides bursaries for students in the Faculty of Medicine and the Faculty of Applied Science and Engineering who are in need and are worthy of financial assistance.

Application should be made to the Secretary of the Faculty not later than October 15.

CYANAMID OF CANADA SCHOLARSHIP

As a part of their programme to encourage technical development in Canada, Cyanamid of Canada Limited offers a scholarship of the value of $900 to a student entering the Third Year in Chemical Engineering or Industrial Engineering. The award is made to a student who has demonstrated high academic ability and outstanding scholarship in the work of the Second Year.

The first award at the University of Toronto was made in 1964.

DOMINION MAGNESIUM LIMITED BURSARY

Dominion Magnesium Limited provides a bursary of $400 for a student entering the First Year in Metallurgy and Materials Science. The award is made primarily on Grade XIII standing but the need for financial assistance is also taken into consideration.

Application should be made by letter to the Secretary not later than September 1. The first award was made in the Session 1958–59.

PROVINCE OF ONTARIO STUDENT AWARDS PROGRAM

The Ontario Student Awards Program is intended to provide opportunities for students of this province who lack adequate financial resources to pursue post-secondary education. To be eligible to apply for assistance the student must be a Canadian citizen or landed immigrant and must have resided in the Province of Ontario for at least twelve months prior to entering the university program for which he is seeking assistance.

The program is intended to supplement rather than replace family and/or student resources. In order to determine the additional funds required the province assesses the cost of the student's education and the resources of the family and/or the student which could reasonably be applied toward the educational costs. The difference between the costs and resources, if any, is provided to the student in a combination of a loan and a free grant in the following proportions: the first $150 is a loan; the next $750 or portion thereof is 60% loan, 40% grant; the balance, if any, beyond $900 is given as a grant.

Application forms and further information may be obtained from the Office of Student Awards, Simcoe Hall, University of Toronto, from May 1 onward. Application well in advance of the commencement of the academic session is advisable.

OW CHEMICAL OF CANADA LIMITED AWARD

ow Chemical of Canada Limited have provided funds for an annual award of $500 a student in Chemical Engineering in the Faculty of Applied Science and Engineering, and grant-in-aid of $250 to be used in the winner's department to help defray e cost of equipment, supplies and administration.

The winner must:

) be registered in the Third Year in Chemical Engineering (the award will be made the second term of the Third Year and will be paid to the winner during his Fourth ear);

) be in the upper half of the class;

) have demonstrated leadership in extra-curricular activities.

The award is not tenable with other awards in the gift of the Senate. Application not required.

IE ELECTRICAL MANUFACTURING COMPANY LIMITED PRIZE

e Electrical Manufacturing Company Limited has established an annual Prize of 5 in the Faculty of Applied Science and Engineering.

e winner must:

() be registered in the Fourth Year in Electrical Engineering;

() obtain the highest aggregate percentage of marks at the final examinations in the bjects of the Fourth Year related to electrical distribution equipment, the subject to determined by the Head of the Department of Electrical Engineering.

This Prize is tenable with other awards in the gift of the Senate.

E JOHN M. EMPEY SCHOLARSHIPS

e John M. Empey Scholarship Fund was established under a bequest of $10,000 in the Will of the late John Morgan Empey, B.A.SC., 1903. Three scholarships of eual value are provided from the income from the Fund. One of these scholarships awarded in each of the First, Second, and Third Years on the results of the annual eminations, to a student who, taking honours, obtains the highest average percntage of marks in the written and laboratory subjects of his Year. The scholarships a open to any students registered in the Faculty. In case the winner of any one of tse scholarships does not attend this Faculty during the session next following the ard, the right to the scholarship shall be forfeited and the award shall be made tanother eligible student. The scholarships were awarded for the first time in 1944.

EGINEERING ALUMNI ADMISSION SCHOLARSHIP

Sven scholarships, each of the value of $1000, are provided annually by the Univerity of Toronto Engineering Alumni Association for students entering the first year of a course in the Faculty of Applied Science and Engineering. The awards are made o the basis of standing in the Ontario Grade XIII examinations.

Application should be made to the Office of Student Awards by May 1 on the regular admission scholarship application form.

ENGINEERING INSTITUTE OF CANADA PRIZE

The Engineering Institute of Canada, having in view that one of its objects is to facilitate the acquirement and interchange of professional knowledge among its members, offers an annual prize of Fifty Dollars in this University, commencing 1931, to the student who, in his Third Year in any one of the six courses of Engineering, has proved himself most deserving as disclosed by the examination results of the year, in combination with his activities in the Engineering Society or with a local branch of another recognized engineering organization.

ENGINEERING SOCIETY SEMI-CENTENNIAL AWARD

The Engineering Society Semi-Centennial Award, to the value of $75 was established in 1931 to commemorate the semi-centennial of the founding of the "School." The award is made to a student entering the final year.

The selection is based upon the following qualifications, which bear equal weigh in the selection of the winner: (*a*) General "School" activities. (*b*) Contributions to the Engineering Society Executive Committee. (*c*) Personality, and social and athletic activities. (*d*) Academic standing.

J. A. FINDLAY SCHOLARSHIPS

These scholarships were established through a legacy bequeathed by the late Miss Janet Findlay to the Department of Mechanical Engineering. Two scholarships are available, each of a value of one half of the income of the fund, to students in this Course, one for a student in the Third Year, the other for a student in the Fourth Year, but only if the student continues his course in Mechanical Engineering. The selection will be made, on recommendation of the Head of the Department of Mechanical Engineering, from amongst the four students having the highest average percentage of marks at the annual examinations in the Second and Third Years respectively, but in making the award the student's general character, fitness for his profession, and financial circumstances will be given consideration. In case a student who has been awarded one of the scholarships changes his course or does not attend this University during the next following session, he shall forfeit his right to the scholarship and the award shall be made to another eligible student.

THE JAMES FRANCESCHINI FOUNDATION SCHOLARSHIP

This scholarship, of a value of $300, is awarded to the student in Civil Engineering who achieves the highest standing, with honours, at the annual examinations of the Third Year among those who do not hold an award of a value of $100 or more based on the results of these examinations.

UGH GALL AWARD

he Hugh Gall Award, of the annual value of One Hundred and Forty Dollars, the ft of the Graduate Class of 1910, "to commemorate a deceased classmate who was splendid type of student, a loyal friend, and nationally outstanding in athletic hievement during his undergraduate career," was established in 1946 for a five ar period and, through the generosity of Mrs. Hugh Gall extended for a further riod. It is awarded to a student, who, having completed his First Year with a general erage of at least 66% without conditions, has entered the Second Year, and is in ecial need of financial assistance in order to enable him to continue his course. It is sirable, but not necessary, that the recipient shall not already have been given any her scholastic award or scholarship applicable to the second year and he shall have own indications of his firm intention and ability to follow successfully the profession engineering.

Any second year student in the Faculty of Applied Science and Engineering is gible to apply for this Bursary. Applications should be made to the Secretary of the culty not later than October 15.

E GRABILL ADMISSION SCHOLARSHIP

e Grabill Admission Scholarship is the gift of Mr. Dayton L. Grabill, a graduate this Faculty in 1924. The Scholarship has a value of approximately $500. It is arded to the candidate who has standing amongst those with the highest average rcentages in the subjects of Ontario Grade XIII required for admission to the Faculty Applied Science and Engineering. The candidate must write the Grade XIII examitions at one sitting in the June preceding entry to the University after not more n one year's instruction in Grade XIII and must register in the Faculty of Applied ence and Engineering.

Application must be made to the Office of Student Awards on the regular Admisn Scholarship form by May 1.

E REGINALD AND GALER HAGARTY SCHOLARSHIP

e Reginald and Galer Hagarty Scholarship, in memory of the dearly beloved sons Lieutenant-Colonel E. W. Hagarty, B.A. 1883, M.A. 1908, and Charlotte Ellen garty, his wife. Reginald Edward Walter Hagarty, B.A.SC. (Honours) 1908, a duate of the University in the Faculty of Applied Science and Engineering and at time of his death on April 29, 1925, a Consulting Structural Engineer. Lieutenant niel Galer Hagarty, Princess Patricia's Canadian Light Infantry, a member of the ss of 1916 in Applied Science, enlisted for the Great War at the end of his third r in June, 1915, killed in action in Sanctuary Wood, June 2, 1916. The scholarship given in recognition of the fact that their father was an honour graduate in Classics the University of Toronto. It is of the value of the annual interest on the capital n of $2,000 and is to be awarded to a student who has been enrolled for his Grade

XIII Year at Harbord Collegiate Institute and having obtained at least the required standing in each of the Grade XIII subjects necessary for admission to the Faculty obtains the highest standing in English, a language other than English, and Mathematics, among the students who apply for the award from the Collegiate. He will be required to: (*a*) register in the Faculty of Applied Science and Engineering, (*b*) sign a declaration to the effect that he is willing to take up arms in the defence of Canada and the British Commonwealth should necessity arise as declared by the Parliament of Canada. The Scholarship was offered for award for the first time in 1945. Application should be made to the Office of Student Awards on the regular admission scholarship application form not later than May 1.

CHESTER B. HAMILTON SCHOLARSHIP

Members of the family of the late Chester B. Hamilton, a graduate of the Faculty in 1906, have presented a Scholarship in his memory of the annual value of $500. It is held by a Fourth Year student in Mechanical Engineering who has achieved outstanding academic standing at the Annual Examinations of the Third Year.

The first award was made on the results of the examinations for the Session 1958–59.

HAMILTON WATCH AWARD

Hamilton Watch Company, Lancaster, Pa., presents a wrist watch, suitably engraved to the Fourth Year student in the Faculty of Applied Science and Engineering who at the annual examinations attains Honour standing and who has achieved high aggregate marks during his four years in the social-humanistic subjects common to all courses.

THE MURRAY CALDER HENRY SCHOLARSHIP

This award was established by the estate of Mrs. Grace Appel Hendry as a memorial to her husband, a graduate of this Faculty in 1905. It has a value of the income from a capital sum of $10,000 and the recipient must:

(*a*) have attained an average of at least 75% on the grade XIII examination papers written at one sitting, required for admission to the Faculty.

(*b*) be entering the First Year of any course in the Faculty of Applied Science and Engineering.

Application must be made to the Office of Student Awards by May 1 on the regular University Admission Scholarship Application form.

The first award was made in the Session 1962–63.

ROY JARVIS HENRY ADMISSION SCHOLARSHIPS

The estate of the late Roy Jarvis Henry provides three scholarships of the value $500 each, to be awarded to students who have achieved high standing on t

Ontario Secondary School qualifications required for admission, two of which are open to students entering any course in the Faculty and one open to students entering Geological Engineering. In the lack of a suitable candidate in Geological Engineering, all three awards are tenable in any course in the Faculty. Application must be made on the regular admission scholarship application form.

HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO BURSARY

The Hydro-Electric Power Commission of Ontario has provided a bursary of the value of $500, which may be awarded to a student entering the second year of the courses in Mathematics and Physics or Commerce and Finance in the Faculty of Arts and Science, or any course in the Faculty of Applied Science and Engineering. Application should be made on the regular in-course bursary form not later than October 15.

IBM – THOMAS J. WATSON MEMORIAL BURSARY FUND

International Business Machines Company Limited has made available one or more bursaries of a total annual value of $1,000 to students registered in any year of a full time course in the university who have standing satisfactory to the committee of Award and demonstrate financial need.

Application should be made to the Office of Student Awards by October 15.

INCO SCHOLARSHIPS

The International Nickel Company of Canada, Limited, annually provides one scholarship to students entering the University of Toronto for studies in Engineering, Geology, Geophysics, Mathematics, Physics or Chemistry with preference being given to Metallurgical Engineering. Awards are renewable for three additional academic years provided satisfactory standing is maintained.

Valued at $1,200 annually, each scholarship provides for tuition and fees, a $300 living allowance, and a grant of up to $500 to the University as a cost-of-education supplement.

To be eligible for consideration the applicant must obtain an average of 75% or over in the Ontario Grade XIII subjects required for admission to his course and demonstrate financial need.

Application must be made to the Office of Student Awards by May 1 on the regular scholarship application form.

JENKINS SCHOLARSHIP

The Jenkins Scholarship, presented by Jenkins Bros., Limited, Montreal, first awarded 1925, has been donated to continue indefinitely.

This Annual Scholarship, of the value of $200, is awarded to the student of the Third Year registered in any course of the Faculty who has the highest aggregate percentages for the First, Second and Third Years.

JOHNSON'S WAX SCHOLARSHIP

S. C. Johnson and Son Limited, Brantford, Ontario, have established a Scholarship of an annual value of $800 in each of the Second, Third and Fourth Years or a total possible value of $2,400.

The recipient must:

(*a*) be registered in Chemical Engineering in the years in which the Scholarship is awarded and held;

(*b*) in the opinion of the Council be the most promising and deserving member of the class, obtaining Honours in the final examinations of the First Year;

(*c*) in his Second and Third Years, maintain academic standing satisfactory to the Council, not necessarily Honours, for the continued enjoyment of the Scholarship. In its discretion the Council may recommend the award of any portion of the Scholarship, lost by the original recipient by failure to maintain satisfactory academic standing, to another student of the year(s) in which the Scholarship would otherwise have been enjoyed.

The first award was made on the results of the annual examinations written in April 1954. It is not tenable with any other Scholarship.

KIMBERLY-CLARK CORPORATION OF CANADA LIMITED SCHOLARSHIPS

Kimberly-Clark Corporation of Canada Limited has presented two scholarships of a value of $500 each and each scholarship is accompanied by a grant of $100 to the general funds of the University. One scholarship is awarded to an outstanding student of the First Year and one to an outstanding student of the Second Year as indicated by the examination results of their respective years. Students in all courses of the First and Second Years are eligible.

The first awards were made on the results of the annual examinations for 1957–58.

THE LEONARD FOUNDATION SCHOLARSHIPS

Leonard Foundation Scholarships are awarded each year to selected students in Universities and Colleges across Canada, including the University of Toronto. The Trust Deed states: "Preference in the selection of students for scholarships shall be given to the sons and daughters respectively of the following: (*a*) clergymen, (*b*) school teachers, (*c*) officers, non-commissioned officers and men, whether active or retired, who have served in Her Majesty's military, naval or air forces, (*d*) graduates of the Royal Military College of Canada, (*e*) members of the Engineering Institute of Canada, (*f*) members of the Mining and Metallurgical Institute of Canada."

All applicants must be nominated by a member of the General Committee. The latest date for the receiving of applications is March 31, for the following academic year. Further information regarding the procedure to be followed in applying for these scholarships may be obtained by writing to the Leonard Foundation, c/o Canada Permanent Trust Co., 320 Bay Street, Toronto 1.

THE J. EDGAR MC ALLISTER FOUNDATION

Through the generosity of the late J. Edgar McAllister, a graduate of the Faculty in 1891, a fund has been established in the University to be known as the J. Edgar McAllister Foundation, to provide financial aid for students who require it, in Mechanical, Chemical, Electrical and Metallurgy and Materials Science. Inquiries should be made in the Faculty Office.

THE JOHN WOLFE MC COLL MEMORIAL AWARDS

These six awards, two of which are open to students in the Faculty of Applied Science and Engineering, are the gift of the estate of the late John Wolfe McColl. The awards have a minimum value of $250 and a maximum of $750. Applicants must have obtained First Class Honours at the final examinations of the preceding year, whether Ontario Grade XIII or at the University of Toronto, demonstrate financial need and be enrolled or undertake to enrol in either Engineering Science or Chemical Engineering. Students seeking first admission to the University must submit applications for an award to the Office of Student Awards on or before May 1. Students in the University must submit applications for an award to the Registrar of the University on or before October 15.

THE J. A. D. MC CURDY PRIZE

The J. A. D. McCurdy Prize of a value of $75 was established by the trustees of a fund created by the members of the Number 3 Squadron, University Air Training Corps (1941–44) in honour of John Alexander Douglas McCurdy, a graduate of the School of Practical Science, who "made the first flight in Canada on February 23, 1909, with a heavier-than-air machine."

It is awarded annually to the student registered in Third Year, Aeronautics Option, in Engineering Science, who, taking honours, ranks highest in annual examinations of the Third Year in the subjects related to Aerodynamics.

The first award was made on the results of the examinations of the Session 1953–54.

THE GARNET W. MCKEE-LACHLAN GILCHRIST SCHOLARSHIP IN ENGINEERING SCIENCE

Mrs. Garnet W. McKee and Professor Lachlan Gilchrist each contributed $1,000 to provide for a Scholarship in the First Year of the Course in Engineering Science. The value of the Scholarship is the annual income from the capital fund and is awarded to the student who ranks first in honours at the annual examinations of the First Year in the Course in Engineering Science. If for any reason that student is ineligible to hold the Scholarship, it will be awarded by reversion to the student ranking second in honours in the Course. In order to receive payment the winner must register in the Second Year of the Course in Engineering Science. The Scholarship was awarded for the first time on the results of the annual examinations of 1947.

THE GARNET W. MC KEE-LACHLAN GILCHRIST GEOPHYSICS SCHOLARSHIPS

Financial assistance was received by Professor Lachlan Gilchrist of the Department of Physics, University of Toronto, from certain organizations and individuals to help him in the prosecution of his research work in Geophysics. With the consent of the contributors, the unexpended balance of these gifts was transferred by Professor Gilchrist to the Board of Governors of the University to be used as an endowment for scholarships, two of which were established in the Faculty of Applied Science and Engineering. To this fund have been added additional amounts received from the estate of the late Garnet W. McKee and from the Hollinger Consolidated Gold Mines Ltd. They are awarded by the Senate, on the recommendation of the Council of the Faculty of Applied Science and Engineering. The first awards were made on the results of the Annual Examinations of 1941.

The First Garnet W. McKee-Lachlan Gilchrist Geophysics Scholarship. This scholarship, of the annual value of $200 is awarded to the student in the Second Year in the Course of Engineering Science who obtains the highest aggregate standing at the examinations of the First and Second Years in the Course, provided always that the student obtains honour standing at the examinations of the Second Year.

The Second Garnet W. McKee-Lachlan Gilchrist Geophysics Scholarship. This scholarship, of the annual value of $165 is awarded to the student in the Second Year in the Course of Engineering Science who, of those students who elect to proceed in the Third Year in the Geophysics Option of the Course, obtains the highest aggregate standing at the examinations of the First and Second Years, provided always that the student obtains honour standing at the examinations of the Second Year, and excluding always the student to whom the First Lachlan Gilchrist Geophysics Scholarship has been awarded.

If in any year there is no student who has fulfilled the condition as laid down for the Second Lachlan Gilchrist Geophysics Scholarship, it shall be awarded to the student in the Second Year in the Course in Engineering Science who obtains the second highest aggregate standing at the examinations of the First and Second Years of that Course, provided always that such student obtains honour standing in the examinations of the Second Year.

LACHLAN DALES MC KELLAR ADMISSION SCHOLARSHIPS

Provided by a bequest of the late Leona D. McKellar, two scholarships of the value of $500 each, are offered to students who have achieved high standing on the Ontario Secondary School qualifications required for admission to the Faculty. Application must be made on the regular admission scholarship application form.

THE ALEXANDER MAC LEAN SCHOLARSHIP

This scholarship was established by graduates of the University of Toronto and other friends in honour of Professor Alexander MacLean, B.A. (1908) who retired in 1954

he scholarship, of the value of $250, is awarded to a student in the Third Year of eological Sciences, Faculty of Arts, or in the Third Year of Geological Engineering, aculty of Applied Science and Engineering, who, obtaining not less than 75% in e work of the year, obtains the highest standing in the geological subjects common the two courses.

The first award was made in 1955.

AC LENNAN-MAC LEOD MEMORIAL PRIZE

he Graduating Class of 1910 has donated an annual prize, known as "The lacLennan-MacLeod Memorial Prize", in memory of their first Class President, eorge MacLennan, who was killed in action in France in 1917, and of Doug. lacLeod, their first Secretary, who died in France in 1916 from wounds received i action.

The prize, of the value of $25, is awarded to the First Year student in the Faculty c Applied Science and Engineering who ranks highest in Calculus among those who ctain standing without condition at the annual written examinations; or, in the event c more than one student obtaining equally high rank in Calculus, the award is made t the one of these who also has the highest standing in some other subject common t the competitors, such as Analytical Geometry, such subject to be determined by t Council of the Faculty.

An award will not be made in any year in which, in the opinion of the Council, n student obtains a sufficiently high standing in Calculus to merit the award. If in a year no award is made, a second award will be available in subsequent year.

CARLES GORDON MANNING PRIZE

Te Charles Gordon Manning Prize was established by a bequest under the Will of th late Jennie Manning in the amount of $500, the annual income from which is tobe used to buy books for the winner of the Prize.

The recipient must be enrolled in the Second Year of a course offered by the Faculty of Applied Science and Engineering and, in the opinion of the Council, rank second to the student awarded the Harvey Aggett Memorial Scholarship in the considerations specified for the award of that Scholarship, namely, obtaining honours in hi final examinations and being one of the first three in his year by his standing at thse examinations relative to the pass requirements in his Department and being "adjudged highest of the three in general student activities and service in the Universi during his period of attendance."

The first award was made on the results of the Annual Examinations of 1954.

MRSLAND ENGINEERING LIMITED SCHOLARSHIP

The Marsland Engineering Limited Scholarship, the gift of Marsland Engineering Limited, has a value of $250. It is awarded to the student who, having been granted

a Dominion-Provincial Student Aid Bursary in his First Year, is registered in Mechanical or Electrical Engineering and obtains the highest average percentage of marks, with honours, at the annual examination of the First, Second or Third Years in the session in which the award is made.

The first award was made at the annual examinations of 1954.

MASSEY-FERGUSON LIMITED SCHOLARSHIPS

Massey-Ferguson Limited has established two scholarships each of an annual value of $250, to be awarded on the recommendation of the Council of the Faculty of Applied Science and Engineering to students registered in the Fourth Year of the Courses in Mechanical Engineering or Industrial Engineering. In making the award academic achievement, financial need, extra-curricular activities and such other factors as may be deemed appropriate will be taken into consideration.

Application should be made to the Secretary of the Faculty not later than October 15.

JAMES L. MORRIS MEMORIAL PRIZE

The James L. Morris Memorial Prize is the gift of Mrs. J. H. Craig and Mr. J. R Morris, K.C., in memory of their father, James L. Morris, C.E., O.L.S., D.Eng., th first graduate of the School of Practical Science, who died in 1946 after a distin guished career. Graduating in Civil Engineering in 1881 as the sole member of hi class, Dr. Morris engaged in railway work for some time, first as an engineer an then as a contractor. For 43 years he conducted a successful civil engineering prac tice in Pembroke, Ontario, involving important undertakings in the field of municipal power and bridge work.

This Prize, of the value of the annual income from $3,000, is awarded annuall to the student in the Second Year of the Course in Civil Engineering who obtain the highest aggregate percentage at the annual examinations of the First and Secon Years of the course, provided always that the student obtains honour standing a the Examinations of the Second Year.

OTTO HOLDEN SCHOLARSHIP

Otto Holden, B.A.Sc., C.E., D.Eng., was a distinguished hydraulic engineer of inte national reputation. He served Ontario Hydro for 47 years and retired as Chief Enginee in 1960, having been involved in almost all of the major hydro-electric development in Ontario. On his death Mr. Holden left a sum of money which was later augmente by his widow, the late Florence Holden, to establish a scholarship in the Faculty c Applied Science and Engineering. This scholarship, which has a value of approximatel $750 is awarded to the student who, completing the Fourth Year in Civil Engineerin or Mechanical Engineering with Honours, obtains the highest aggregate marks i hydraulic engineering subjects in the Third and Fourth Years of the course. The fir award was made in the session 1967/68.

HE ONTARIO HOCKEY ASSOCIATION WAR MEMORIAL SCHOLARSHIP

he Ontario Hockey Association War Memorial Scholarship, the gift of the Ontario ockey Association, is to be awarded annually at the Grade XIII examination to an pplicant whose father served overseas with the Canadian Forces in World War I. The value of this scholarship is $100 in cash, with an allowance of the same mount on the tuition fee for each session.

In determining the award of the scholarship, the academic qualifications of the ndidate shall be first taken into account, provided always that no candidate shall eligible for an award who has not met all the conditions required by the University candidates for admission scholarships generally; but, *cæteris paribus,* the award shall made to a student who is in proved need of assistance.

The award shall be made by the Senate of the University upon the report of a committee to be appointed by the Senate, upon which committee there shall be always ce member of the Staff of the University who shall be deemed to be representative the Association.

Application should be made to the Office of Student Awards on the regular scholarship application form not later than May 1.

ENDA LIMITED SCHOLARSHIPS

Cenda Limited has donated three scholarships each of a value of $500, awarded anually to students completing the First, Second and Third Years respectively in urses other than Geological Engineering. These scholarships are awarded to students h high academic standing and in cases of close competition, preference will be gen to the student who indicates that he possesses initiative and leadership qualities and that he will be a credit to his profession after graduation.

This award may be held with other awards provided that the monetary value of the other awards does not exceed $100. The first award was made in the Session 1955–56.

PAULIN MEMORIAL SCHOLARSHIP

The Paulin Memorial Scholarship, provided through the generosity of the late Mr. Fred W. Paulin, a graduate of this Faculty in 1907, was established in memory of his brother, John Cameron Paulin, a student of this Faculty, who was fatally injured in 1906 during a football practice. The scholarship, which has the value of the income from a capital fund of $10,000, approximately $475 annually, is awarded to a student who obtains high standing in the work of the first year in the Faculty of Applied Science and Engineering.

PROCTER AND GAMBLE BURSARY PLAN

Procter and Gamble Bursaries, the gift of the Procter and Gamble Company of Canada, are awarded annually to students in all years. Applicants must have at least

Second Class Honours or better in the final examinations of the preceding year ar demonstrate financial need. Applications must be submitted to the Office of Stude Awards on or before December 1.

ASSOCIATION OF PROFESSIONAL ENGINEERS OF THE PROVINCE OF ONTARIO ADMISSION SCHOLARSHIP

The Ontario Professional Engineers Foundation for Education provides an admissic scholarship of the value of $500. It is awarded to the candidate who obtains th highest average percentage in the subjects of Grade XIII prescribed for admission the Faculty of Applied Science and Engineering. In order to qualify for the schola ship a candidate must at one Scholarship examination obtain an average of at lea 75% in the subjects of Grade XIII prescribed for admission to the Faculty and mu register in the Faculty of Applied Science and Engineering. The scholarship will n be awarded to a student who has spent more than one year in Grade XIII or mo than five years in a Secondary School or its equivalent unless he can show eviden satisfactory to the Council that his attendance has been extended beyond the perio specified for reasons beyond his control. This scholarship is not tenable with any oth Admission scholarship.

Application must be made to the Office of Student Awards before May 1.

ASSOCIATION OF PROFESSIONAL ENGINEERS OF THE PROVINCE OF ONTARIO SCHOLARSHIPS

The Ontario Professional Engineers Foundation for Education offers scholarshi of a value of $250 in each of the First, Second and Third Years in the Faculty Applied Science and Engineering in any course, to the students who, taking Honou obtain the highest standing in the work of their respective years.

These scholarships will not be awarded to students who hold other scholarships.

PROFESSIONAL ENGINEERS GOLD MEDAL

The Association of Professional Engineers of the Province of Ontario has establish in the Faculty of Applied Science and Engineering an award in the form of a go medal accompanied by a gift of technical books of an approximate value of $50. Th award will be made to the student of the final undergraduate year in any course wh taking honours, obtains the highest weighted average percentage in the practical wo and written examinations of the year.

RANSOM SCHOLARSHIP IN CHEMICAL ENGINEERING

The Ransom Scholarship in Chemical Engineering is presented by A. C. Ranso Esq., of Toronto, for the purpose of encouraging and giving financial assistance students who choose the field of Chemical Engineering. This donation, consisting $5,000, provides for a perpetual scholarship of an annual amount such as will

rived from the income of this sum. The first award was made on the results of e annual examinations of 1938.

The scholarship will be awarded annually to the student registered in the Course in emical Engineering who obtains the highest aggregate percentage of marks in the aminations of the First Year. The scholarship will be paid to the winner only if he oceeds to take his Second Year in the Course in Chemical Engineering in the iversity of Toronto.

E. REID MEMORIAL PRIZE

is prize, established in 1967 in memory of the late Professor J. E. Reid, is awarded the student in the Fourth Year of the course in Electrical Engineering who, gradung with honours, achieves the highest aggregate marks in the Fourth Year examitions in the subjects pertaining to electronic communication.

E RHODES SCHOLARSHIPS

e Rhodes Trustees offer for award in the Province of Ontario two out of ten of : Rhodes Scholarships for Canadians, each of the value of £1,000 and tenable at ford University for a period of two years; in certain cases, a third year may be thorized.

Each candidate must be a British subject with at least five years domicile in nada and unmarried; he must have passed his nineteenth but not twenty-fifth thday on October 1 of the year *for* which he is elected; he must have completed first year of his course at a Canadian university at the time of application.

A candidate may apply either for the province in which he has his private home residence, or for the province in which he has taken his university course.

In that section of the will in which he defined the general type of scholar he ired, Mr. Rhodes mentioned four groups of qualities, the first two of which he sidered most important.

(1) Literary and scholastic attainments;

(2) Qualities of manhood, truth, courage, devotion to duty, sympathy, kindliness, unselfishness, and fellowship;

The scholarship will be awarded annually to the student registered in the Course in

(3) Exhibition of moral force of character and of instincts to lead and to take an interest in his fellows;

(4) Physical vigour, as shown by fondness for and success in outdoor sports.

Some definite quality of distinction, whether in intellect, character or personality, in any combination of these, is the most important requirement. Financial need es not receive special consideration.

Forms of application and full information regarding these scholarships may be tained from the Registrar, University of Toronto, or from J. L. Stewart, Esq., neral Secretary for the Rhodes Scholarships in Canada, 14th floor, 320 Bay St.,

Toronto 1. Selection is made in December for the following year and all applicatio must reach the provincial secretary before November 15 annually.

R.C.E. MEMORIAL SCHOLARSHIP

The Memorial Fund Committee of the Royal Canadian Engineers has established t R.C.E. Memorial Scholarship of a value of $125, open to students who have succe fully completed their second to last year in the Faculty of Applied Science a Engineering or the School of Architecture.

A candidate must be

(*a*) a member in good standing of the Canadian Officers Training Corps and ha successfully completed one summer season's training, or

(*b*) an ex-member of the Canadian Officers Training Corps who has successfu completed two years of C.O.T.C. Training and has transferred to the Canadian Arr (Militia) or to the Canadian Army (Supplemental Reserve), or

(*c*) a member of the Canadian Army (Regular) attending University under t Regular Officers Training Plan.

Selection is made on the basis of academic standing and of qualities of leadersh

Application forms may be obtained from the Office of Student Awards.

REGULAR OFFICER TRAINING PLAN

Tenable in approved degree courses, this plan is available to Canadian citizens w undertake to serve in the armed forces for at least four years after graduatic Accepted candidates will receive tuition, a book allowance of $125 and a livi allowance of $193 per month during the academic session.

Application should be made to the Canadian Forces Recruiting Centre, 25 St. Cl Avenue West, Toronto 7.

HELEN E. ROGERS ADMISSION SCHOLARSHIPS

Admission scholarships have been established from a bequest from the estate of Hel E. Rogers open to students entering any degree course in the University. Preferen is given to applicants from outside Ontario but failing such candidates awards m be made to qualified Ontario students. Recipients must have a standing satisfactc to the Committee of Award on first admission and may continue to enjoy the schol ship in the upper years provided they maintain first class standing. The value in ea year is a minimum of $200 and a maximum of $1,500 dependent on financial ne The number of awards made each year is determined by the annual income availab

Application should be made to the Office of Student Awards by May 1 on the regul admission scholarship application form.

DON SALT MEMORIAL SCHOLARSHIPS

In memory of Donald John Salt, a graduate of the Faculty of Applied Science a Engineering and a practising geophysicist, the Canadian Exploration Geophysi

ociety has provided two scholarships of the value of $500 which are open to udents in the Third and Fourth Years of certain courses in the Faculty of Arts and cience, and in Geological Engineering and the Geophysics option of Engineering cience in the Faculty of Applied Science and Engineering.

The award is made on evidence of the interest and ability of the applicant in elation to the field of mining geophysics.

Application should be made either to the Chairman of the Department of Physics the Chairman of the Department of Geology by March 1 in the calendar year in hich the award is to be made.

REDERICK W. SCHUMACHER SCHOLARSHIP

he Frederick W. Schumacher Scholarship has been awarded in the Faculty of pplied Science and Engineering and in the Faculty of Arts under a bequest of the te Frederick W. Schumacher. It has a value of the income from the fund. The holar must (*a*) be enrolled in the Second, Third or Fourth years in Geological ngineering in the Faculty of Applied Science and Engineering or in Physics and eology or Geological Sciences in the Faculty of Arts and (*b*) must have high academic anding.

Applications must be submitted to the Office of Student Awards not later than ctober 15.

ECOND MILE ENGINEER" AWARD

he Class of 3T5, convinced that a successful engineer must not only be profession- y competent but also constantly aware of his responsibilities to humanity, and spired by an address of President William E. Wickenden of the Case School of pplied Science, Cleveland, called "The Second Mile," which was based on the text om the Sermon on the Mount, "whosoever shall compel thee to go one mile, go th him twain" has established the "Second Mile Engineer" award. It is the desire the donors to encourage undergraduates to participate fully in extra-curricular tivities and to recognize the true importance of the more liberal subjects of the rriculum with the ultimate objective, on entering the profession, of becoming rthy Second Mile Engineers. The award comprises a grant of $200, a suitably scribed presentation piece and an illuminated scroll, and is presented to a student his final year.

An eligible group is chosen from those who have taken a prominent part in the airs of the Faculty, either as office holders or in athletics. In making the award nsideration is given to academic standing, with special emphasis on the candi- te's attainments in the cultural and humanistic-social studies.

Particulars are furnished each session by the Class of 1935.

IE SIMPSONS-SEARS LIMITED (NORTHERN ONTARIO) SCHOLARSHIPS

ese scholarships, the gift of Simpsons-Sears Limited, are open only to students of

the Copper Cliff High School, The Sudbury High and Technical Schools, the Stur geon Falls High School, the North Bay Collegiate Institute and Vocational School the Kapuskasing High School and all the Secondary Schools along the Ontari Northland Railway. A scholarship of the value of $100 is available for each of th schools mentioned and an additional sum of $50 will be given to the student wh obtains the highest percentage of the nine papers of Grade XIII selected in accordanc with the regulations.

No scholarship will be awarded unless the candidate is in actual attendance in on of the colleges or faculties of the University and maintains a uniformly high standar to the satisfaction of the donors of the scholarships.

Application for these scholarships must be sent not later than May 15, to th Principal, Algonquin Composite School, North Bay, from whom further informatio may be obtained regarding conditions of award.

WALLACE AWARD
SOCIETY OF AUTOMOTIVE ENGINEERS PRIZE

In memory of William Wallace, Professor of Mechanical Engineering, University o Toronto, the Ontario Society of Automotive Engineers offers an annual prize of th value of $100 to a student of the Fourth Year in any course whose thesis on a topi related to Automotive Engineering is considered by the Head of the Departmen of Mechanical Engineering to be of suitable quality and the most satisfactory.

SOCIETY OF CHEMICAL INDUSTRY MERIT AWARD

The Society of Chemical Industry Merit Award is made annually by the Society t the student in Fourth Year in the Department of Chemical Engineering who obtain the highest weighted average of marks in the results of the annual examinations fo the year. The award is a gold key.

THE MURRAY F. SOUTHCOTE SCHOLARSHIP

Established by friends of the late Murray F. Southcote, a graduate of this Facult (Aeronautical Engineering, 1950) this scholarship, which has a value of $100, i awarded in recognition of high standing at the Annual Examinations of the Thir Year, in any course in the Faculty.

The first award was made in the Session 1964–65.

SPRUCE FALLS POWER AND PAPER COMPANY LIMITED SCHOLARSHIPS

The Spruce Falls Power and Paper Company Limited has established four Schola ships of a value of $400 each, two in the Second Year and two in the Third Yea They are awarded on the results of the Annual Examinations of the Second and Thir Years to the students who obtain honour standing at the examinations of thei

spective years and are open to students in all courses in the Faculty. The first awards ere made on the results of the examinations of 1951.

Each scholarship carries a grant of $150 to the University General Funds.

ALTER STERLING ADMISSION SCHOLARSHIPS

tablished in memory of Walter Sterling, these scholarships are open to students tering any first degree course at the University of Toronto. Recipients must obtain rst Class Honours standing on the nine Ontario Grade XIII papers required for mission, and may continue to enjoy the scholarships in each year of their course oviding they maintain Honour standing. The value of the scholarship is from $200 $1,500 annually, dependent on financial need. The number of awards made each ar is determined by the annual income available.

Application should be made to the Office of Student Awards on the regular olarship application form. The statement of financial need should be completed an award greater than $200 is desired.

E WILLIAM STORRIE MEMORIAL SCHOLARSHIPS IN CIVIL ENGINEERING

ree Scholarships have been established by Mrs. William Storrie in memory of her sband, the late William Storrie, a Consulting Engineer on many municipal projects Canada and for several years a special lecturer in the Faculty of Applied Science d Engineering, for students in Civil Engineering, as follows:

) Of a value of $100 to a student who obtains high standing in the annual examinaons of the Second Year in Civil Engineering.

) Of a value of $100 to a student who obtains high standing in the annual examiions of the Third Year in Civil Engineering.

) Of a value of $200 to the student who obtains the highest standing in the annual aminations of the Fourth Year in the Municipal and Sanitary Option of the course i Civil Engineering.

n all cases the candidates shall have demonstrated qualities of integrity and shown pmise of leadership in their profession.

The first awards were made for the Session 1956–57.

ITH TYRRELL MEMORIAL BURSARY

Te Women's Association of the Mining Industry of Canada has presented this Bursy, having the value of $600, annually, commencing in 1939, and named in memory o their founder and first president, Mrs. Edith Tyrrell. A medal donated by Dr. Tyrell accompanies this Bursary. The Bursary is awarded to a student entering the Tird or Fourth Year in the Course of Metallurgy and Materials Science, or Geoloical Engineering; it may be awarded two years in succession to the same student, ou will usually be awarded at the beginning of the Third Year. The award will be mde by a special committee appointed by the Association on the following basis:

(*a*) In addition to mental capacity, the student must show leadership ability a give promise, through his activities, of becoming a worthwhile influence in the affa of the profession and the community.
(*b*) While attention is given to scholastic ability, as evidenced by his acaden standing, it is not the governing factor. He must, however, stand in the top quar of his class.
(*c*) Special consideration is given to financial need.

Application must be made to the Secretary of the Faculty within one month of t opening of the academic year.

S. UBUKATA FUND

The S. Ubukata Fund for Japanese students was established to assist students fro Japan proper to pursue a course of study at the University of Toronto. The fund pr vides grants of varying values on the basis of the information submitted by the applican who:
(*a*) must be Japanese students from Japan proper;
(*b*) must register in the University of Toronto devoting full time to their studies;
(*c*) are able to satisfy admission requirements regarding English facility;
(*d*) are not holding other financial aid.

UNIVERSITY OF TORONTO ALUMNI ASSOCIATION WAR MEMORIAL SCHOLARSHIPS

Six scholarships are awarded annually by the University of Toronto Alumni Associ tion to students entering first degree courses at the University of Toronto. Th scholarships have a value of $500 annually, and are tenable for two years, providir satisfactory academic standing is maintained. They are awarded for general proficienc in Grade XIII, and in addition to academic performance the committee of award wi take into consideration the candidate's relationship to active service in the Arme Forces of Canada, need of financial assistance, participation in extra-curricul activities and such other qualifications as may commend themselves to the committe One scholarship will be available to a student whose home is not in the Provinc of Ontario.

Students resident in Ontario may apply on the general admission scholarship for which must be submitted to the Registrar of the University not later than May Evidence of relationship to active service in the Armed Forces of Canada should b attached. Students resident outside Ontario may obtain the necessary forms from th Office of Student Awards, University of Toronto.

THE U.T.S. ENGINEERING SCHOLARSHIP

The U.T.S. Engineering Scholarship, the gift of R. A. Bryce, Esq., of the value c $250. The scholarship will be awarded by a committee of the Staff of the Universit of Toronto Schools to a student of the Schools who has completed the requiremen for admission to and enrols in the Faculty of Applied Science and Engineering.

ALLBERG ADMISSION SCHOLARSHIPS

wo admission scholarships, each of a value of $500 are awarded annually from the come from the Wallberg Bequest on the recommendation of the Council of the aculty to the two candidates who obtain the highest average percentage in the bjects of Grade XIII prescribed for admission to the Faculty of Applied Science and ngineering. In order to qualify for the scholarship a candidate must at one Scholarip examination obtain an average of at least 75% in the subjects of Grade XIII preribed for admission to the Faculty and must register in the Faculty of Applied cience and Engineering. The scholarship will not be awarded to a student who has ent more than one year in Grade XIII or more than five years in a Secondary School its equivalent unless he can show evidence satisfactory to Council that this attendce has been extended beyond the period specified for reasons beyond his control. his scholarship is not tenable with any other Admission scholarship.

Applications must be submitted to the Office of Student Awards on the prescribed rm by May 1.

ALLBERG UNDERGRADUATE SCHOLARSHIPS

hese scholarships, four in number, of the value of $500 each, derived from the Wallrg Bequest, are awarded annually; two to students ranking first and second respectely at the annual examinations of the First Year; one to the student ranking first at te annual examinations of the Second Year; and one to the student ranking first at te annual examinations of the Third Year.

Any holder of one of these scholarships may not hold other awards listed in the idex with an asterisk. The awards were first made on the result of the annual examirtion of 1947.

S. WILSON MEDALS

hese medals have been provided in recognition of the service to the Faculty of Apied Science and Engineering of its former Assistant Dean and Secretary, William Sewart Wilson.

A medal will be awarded to the student in each graduating course, who, attaining Honours, achieves the highest standing in the final year of his course.

The first awards were made in the Session 1962–63.

LLIAM R. WORTHINGTON MEMORIAL SCHOLARSHIP

he William R. Worthington Memorial Scholarship, the gift of Miss Ida R. Worthingth, in memory of her brother, William R. Worthington, DIP.(1904), B.A.SC.(1905), c the value of the income from a fund is awarded annually to the student of the Second Year in the course in Civil Engineering who ranks highest at the annual exarnations of that year.

The first award was made at the examinations for the Session 1954–55.

LOAN FUNDS

From the loan funds mentioned below, small loans can be made to students who ar in urgent need of assistance. The funds are not large and the loans must accordingl be restricted, both in amount and number, and principally to students in the Third an Fourth Years.

Enquiries for loans from any of the following funds should be made at the office o the Secretary of the Faculty.

Engineering Society Loan Fund
Elizabeth Speller Memorial Fund
James W. Crocker Memorial Fund
Harry F. Bennett Educational Fund
S.A.E. – Canadian Section Loan Fund
Class of 2T7 (SPS) Memorial Loan Fund
Avro Aircraft Limited Engineering Loan Fund
The William Storrie Memorial Fund
3T6 Engineers Loan Association
4T0 Engineering Loan Fund
Women's Association of the Mining Industry in Canada Loan Fund
The Devonshire Loan Fund
Class of '09 Trust Fund
University of Toronto Alumni Loan Fund

CLASS OF 1936 LOAN ASSOCIATION

Members of the Class of 1936 have made arrangements to assist students in obtaini loans through regular banking facilities. Information may be obtained from the Sec tary of the Faculty.

ENGINEERING SOCIETY LOAN FUND

In 1932 the Engineering Society repaid to the Board of Governors a series of ann grants which, over a period of years, had been made to the Society for special p poses. The Board of Governors, appreciating this action, set aside this sum, to known as the Engineering Society Loan Fund, to provide loans to students of Faculty of Applied Science and Engineering. The administration of the fund is car out by a Committee appointed by the Board. The fund is not large, and only sn loans can be made to relatively few students. Further inquiries should be made at office of the Secretary of the Faculty.

ELIZABETH SPELLER MEMORIAL FUND

Through the generosity of Dr. F. N. Speller, of the Class of 1893, the "Elizal Speller Memorial Fund" has been established to provide loans for worthy student the Third and Fourth Years of this Faculty. Applications for loans from this F should be made to the Secretary of the Faculty.

AMES W. CROCKER MEMORIAL LOAN FUND

his fund was established by Mrs. William Crocker in memory of her son, James W. rocker, a graduate in Mining Engineering in 1938, who was killed in an accident in mine in the same year.

RRY F. BENNETT EDUCATIONAL FUND

his fund was established by subscription from members of The Engineering Institute Canada in memory of the late Harry F. Bennett, M.E.I.C., who for six years prior his death in 1946 was chairman of the Institute's Committee on the Training and elfare of the Young Engineer, and who accomplished so much in this field by unting efforts.

One purpose of the fund is to make loans to deserving students who need financial istance to enable them to study engineering sciences at university level, and who ve proved themselves by successfully completing their first year in engineering or e equivalent.

Loans will be made largely on the basis of character and to men who seem likely to velop the high professional standards which are essential to leadership in engineerin science. A student who has been aided by this fund should feel that high obligatins are placed on him; obligations to the subscribers, to the trustees, and to those oming after him who in turn can receive help as his loan is repaid.

Application forms may be obtained at the Faculty Office. The regulations are simple al the application of any worthwhile student will be given immediate and careful attention.

SCIETY OF AUTOMOTIVE ENGINEERS – CANADIAN SECTION LOAN FUND

Te Society of Automotive Engineers – Canadian Section has established a loan fund o$1,200 in the Faculty of Applied Science and Engineering. Preference is given to stlents in good scholastic standing and engaged in studies relative to the automotive al aircraft industries, and to students in fourth, third and second years in that order. Pticulars may be obtained from the Secretary of the Faculty.

AVO AIRCRAFT LIMITED ENGINEERING LOAN FUND

Avo Aircraft Limited has established a Loan Fund of $3,000 to provide loans to erineering students requiring financial assistance. Application should be made to the Secretary of the Faculty.

TH WILLIAM STORRIE MEMORIAL FUND

Th William Storrie Memorial Fund has been established by Mrs. William Storrie to provide loans to undergraduates in the course in Civil Engineering. Application should benade to the Secretary of the Faculty.

THE DEVONSHIRE LOAN FUND

This Fund has been established by Graduates and friends of Devonshire House to assist students in the Residence. Application should be made to the Office of the Dean of Devonshire House.

CLASS OF '09 TRUST FUND

The Class of '09 on the 50th Anniversary of their graduation made a sum of money available in the Faculty for financial aid to undergraduates, with preference to Second Year students. Inquiry should be made to the Secretary of the Faculty.

THE UNIVERSITY OF TORONTO ALUMNI LOAN FUND

This fund comes from subscriptions received originally in 1919 and in succeeding years from graduates of the University and is administered by the University of Toronto Alumni Association.

Loans are available to undergraduate and graduate students enrolled in a full time course at the University, in second and subsequent years.

Particulars may be obtained from The University of Toronto Alumni Association, Alumni House, Willcocks Street, Toronto.

Discipline

SUMMARY OF THE REGULATIONS OF THE CAPUT CONCERNING STUDENT DISCIPLINE

1. Subject to the general regulations of the Caput of the University regarding jurisdiction in matters of discipline the Council of University College, the governing bodies of the Federated Universities and Affiliated Colleges, and the Councils of the Faculties, Schools, and Institutes have disciplinary jurisdiction over the conduct of all students registered in these Divisions of the University in all matters of local or internal concern to these Divisions. Jurisdiction over the conduct of students while in residence regardless of the Division of the University in which they are registered is vested in the body administering the residence.

2. Jurisdiction concerning conduct likely to affect the interests of the University as a whole is vested in the Caput.

3. The Students' Administrative Council will be supported in the proper performance of all its obligations and duties as provided in its Constitution.

4. Where the appropriate body exercising disciplinary jurisdiction has found that a student of the University has engaged in conduct prejudicial to the interests of the University, the Caput may, in its discretion, suspend or expel such student from the academic privileges of the University. Every decision of the Caput involving the expulsion of a student from the University requires confirmation of the Board of Governors.

5. Any student who interferes with the personal liberty of another or who subjects another student to indignity or personal violence may be considered by the Caput or any other body exercising disciplinary jurisdiction in the University to have committed a breach of discipline.

6. Initiation ceremonies involving physical violence, personal indignity, interference with personal liberty, or destruction of property, may be deemed a breach of discipline by the Caput or any other body exercising disciplinary jurisdiction in the University.

7. Without limiting the disciplinary powers vested in the respective bodies exercising disciplinary jurisdiction as set forth in sections 1–7, the following are cited as illustrations of conduct which, in the past, has been considered a breach of discipline prejudicial to the interests of the University:

(i) The organising of a parade on the streets of the city or the taking part in such a parade without permission of the authorities.

(ii) The destruction or defacing of University property, raids on Residences or other University buildings, and the breaking into University buildings.

(iii) Rowdy and other forms of behaviour, either on or off the Campus, of such an objectionable nature as to bring the University into public disrepute.

8. Student Clubs and Associations

(a) The constitution of every society or association of students in the University and all amendments to such constitutions require to be approved by the relevant University authorities. The giving of approval, and the responsibility for the programmes of student societies and associations, shall rest as follows:

(i) With the authorities of the College, Faculty or School concerned where the membership of the student society or association is drawn from a single College Faculty or School.

(ii) With the Board of Stewards of Hart House, where the student society or association is a Committee of Hart House and is controlled by the Board of Stewards of Hart House.

(iii) With the Caput, in the case of all other student societies and associations.

(b) No approval will be given by any of the authorities listed in (a) above to the constitution of any society or association of students if that constitution permits:

(i) Membership in the society or association to persons who are not students of the University, unless in the case of the societies listed in (a) (ii) above, where membership is open also to graduates of the University and members of the Faculty of the University.

(ii) Any action of discrimination based upon race, religion, or colour.

9. The name of the University is not to be used in connection with a publication of any kind without permission of the Caput.

Professores Emeriti

AN EMERITUS

R. McLaughlin, M.A.SC., M.A., PH.D., D.SC.,
ofessor Emeritus of Chemical Engineering

OFESSORES EMERITI

A. Allcut, M.SC.(BIRM.), M.E., F.R.AE.S.,
ofessor Emeritus of Mechanical Engineering

B. Dunbar, B.A.SC.,
ofessor Emeritus of Engineering Drawing

E. Helwig, M.A.SC.,
ofessor Emeritus of Civil Engineering

B. Jackson, B.A.SC., D.SC.(WATERLOO),
ofessor Emeritus of Applied Physics

J. Marshall, B.A.SC., C.E., O.L.S.,
ofessor Emeritus of Civil Engineering

G. McIntosh, B.A.SC.,
ofessor Emeritus of Mechanical Engineering

W. Melson, B.A.SC.,
ofessor Emeritus of Surveying and Geodesy

F. Morrison, B.E.(SASK.), M.SC.(MCG.),
ofessor Emeritus of Civil Engineering

M. Pidgeon, M.B.E., B.SC.(OXON.), PH.D.(MCG.), F.R.S.C.,
ofessor Emeritus of Metallurgical Engineering

A. Smith, M.A.(MCM.),
ofessor Emeritus of Chemical Engineering

G. Smith, B.A.SC.,
ofessor Emeritus of Electrical Engineering

F. Tracy, B.A.SC., S.M.(M.I.T.),
ofessor Emeritus of Electrical Engineering

Wardell, B.A.SC.,
ofessor Emeritus of Engineering Drawing

J. T. Wright, M.B.E., B.A.SC., B.A.,
ofessor Emeritus of Engineering Drawing

1969–70

THE UNIVERSITY

President: C. T. Bissell, M.A., PH.D., D. ÈS L., D.LITT., LL.D., F.R.S.C.
Acting President: J. H. Sword, M.A. *(1967–68 Session)*
Vice-Provost and Executive Assistant to the President: D. F. Forster, B.A., A.M.
Assistant to the President: N. S. C. Dickinson, C.D., B.A.

Vice-President and Provost: M. St. A. Woodside, M.A., LL.D.

Vice-President (Health Sciences): J. D. Hamilton, M.D., F.R.C.P.(C.)
Vice-President (Research Administration):
G. de B. Robinson, M.B.E., B.A., PH.D., F.R.S.C.

Chief Librarian: R. H. Blackburn, M.A., B.L.S., M.S., LL.D.

Executive Vice-President (Non-Academic): A. G. Rankin, B.COM.
Vice-President (Administration): F. R. Stone, B.COM., C.A.
Financial Analyst: G. L. Court, D.F.C., M.COM., C.A.
Secretary of the Board of Governors and
Director of Administrative Services: D. S. Claringbold
Director of Physical Plant: F. J. Hastie, B.SC., P.ENG.
Vice-President and Registrar: R. Ross, M.B.E., M.A.
Executive Assistant to the Vice-President and Registrar: W. Kent, M.A.

Director of Admissions: E. M. Davidson, B.A.
Director of Student Awards: Miss H. L. Reimer, B.A., B.PED.
Special Officer (Secondary School Liaison): J. R. H. Morgan, M.B.E., M.A., B.PAED., LL.
Director of Statistics and Records: J. H. Tusiewicz, M.A.SC., M.B.A.
Director of University Health Service: G. E. Wodehouse, M.C., M.D., F.R.C.P.
Assistant Director of University Health Service–Women: Miss F. H. Stewart, B.A., M.
Director of Placement Service: A. W. Headrick, M.A.
Director of International Student Centre: Mrs. K. Riddell, B.A.
Director of the Advisory Bureau: D. J. McCulloch, B.A., M.D., D.PSYCH., F.R.C.P.
Director of Housing Service: Mrs. M. G. Jaffary, B.A.

irector of University Extension: G. H. Boyes, M.A.
irector of University of Toronto Press: M. Jeanneret, B.A., LL.D.
irector of Information: K. S. Edey
irector of Alumni Affairs: J. C. Evans, B.A.
irector of Development: R. J. Albrant
arden of Hart House: E. A. Wilkinson, B.A.
irector of Athletics and Physical Education – Men: W. A. Stevens, B.S.
irector of Athletics and Physical Education – Women (Acting):
Miss A. Hewett, B.ED., P.E.

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The University of Toronto issues the following calendars and other publications concerning courses of instruction given by the University, any one of which may be had on application to the Office of Admissions of the University, or to the Secretary of the Faculty, School or Institute about which information is sought.

ENERAL INFORMATION:	University of Toronto Handbook
DMISSION INFORMATION:	Admission Awards
	Admission Circular
PPLIED SCIENCE AND ENGINEERING:	Faculty of Applied Science and Engineering
	Engineering at Toronto – descriptive brochure
RCHITECTURE:	School of Architecture
	Landscape Architecture – descriptive brochure
	Graduate Work in Architecture – descriptive brochure
RTS AND SCIENCE:	Faculty of Arts and Science
	Courses and Subjects in Arts and Science
	Diploma Course in Computing and Data Processing
USINESS:	School of Business – Graduate Programme in Business Administration
HILD STUDY:	Institute of Child Study
ENTISTRY:	Faculty of Dentistry
	Courses for Graduates in Dentistry
	Dental Hygiene
DUCATION:	The College of Education
	Graduate Degrees in Education*
XTENSION:	Degree Courses in Extension
	Certificate Course in Business
	Certificate Course in Public Administration
	Certificate Course in Criminology
	Evening and Afternoon Courses in the Liberal Arts
	Business and Professional Courses
	Correspondence Courses
	Pre-School Education
OOD SCIENCES:	Faculty of Food Sciences
ORESTRY:	Faculty of Forestry
RADUATE STUDIES:	School of Graduate Studies
YGIENE:	School of Hygiene
AW:	Faculty of Law
IBRARY SCIENCE:	School of Library Science
EDICINE:	Faculty of Medicine
	Division of Rehabilitation Medicine
	Division of Postgraduate Medical Education
USIC:	Faculty of Music
	The Royal Conservatory of Music
	School of Music Year Book
	General Syllabus
	Pianoforte and Theory Syllabus
URSING:	School of Nursing
HARMACY:	Faculty of Pharmacy
HYSICAL AND HEALTH EDUCATION:	School of Physical and Health Education
OCIAL WORK:	School of Social Work

*Write to: Ontario Institute for Studies in Education, 102 Bloor Street West, Toronto 181, Ontario.

NOTES

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CALENDAR 1970/71
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UNIVERSITY OF TORONTO

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May

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June

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July

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August

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September

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October

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31						

November

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December

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26	27	28	29	30	31	

University of Toronto
Faculty of Architecture
Urban and Regional Planning
and Landscape Architecture

Sessional Dates 1970/71

Last day for receiving applications and fees for August Supplemental examinations	July 3, Friday
Supplemental Examinations commence	August 3, Monday
Dorset Summer Workshop	Sept. 8, Tues. – Sept. 17, Thurs.
Registration Day	September 18, Friday
Academic Year begins at 9 a.m.	September 21, Monday
Dean's address to all students of the Faculty at 1 p.m. Room 103	September 22, Tuesday
Faculty Council	October 7, Wednesday
Remembrance Day	November 11, Tuesday
Fall Convocation	November 27, Friday
Last Day for receiving applications for Core Supplemental Course	November 30, Monday
Faculty Council	December 9, Wednesday
Term ends 5 p.m.	December 18, Friday
Christmas Vacation	16 days
Spring Term begins (lectures commence at 9 a.m.)	January 4, Monday
Registration of Special (full time) CORE Supplemental Students	January 4, Monday
Faculty Council	February 17, Wednesday
Reading Week	February 15 – February 19
Faculty Council	March 24, Wednesday
End of lectures and studios	April 8
Good Friday	April 9

Sessional Dates 1970-71 (Cont'd)

Examinations and year end reviews	April 19 – May 7
Faculty Council	May 19, Wednesday
Faculty Council	May 21, Friday
Start of University Commencement	May 28, Friday

1970/71 Statutory Holidays

Dominion Day	July 1, Wednesday
Civic Holiday	August 3, Monday
Labour Day	September 7, Monday
Thanksgiving Day	October 12, Monday
Christmas	December 25, Friday
New Year's Day	January 1, Friday
Good Friday	April 9, Friday
Victoria Day	May 24, Monday

ADMINISTRATIVE OFFICERS 1969/70

The University

President C. T. Bissell, M.A., Ph.D., D. ès L., D.Litt., LL.D., F.R.S.C.

Assistant to the President N. S. C. Dickinson, C.D., B.A.

Executive Vice-President (Academic) and Provost J. H. Sword, M.A.

Vice-Provost and Executive Assistant to the President
D. F. Forster, B.A., A.M.

Executive Vice-President (Non-Academic) A. C. Rankin, B.Com., F.C.A.

Executive Assistant to the Executive Vice-President (Non-Academic)
J. F. Brook

Vice-President (Administration) F. R. Stone, B.Com., F.C.A.

Secretary of the Board of Governors D. S. Claringbold

Director of Administrative Services M. A. Malcolm, B.A.

Director of Physical Plant F. J. Hastie, B.Sc., P.Eng.

Director of Finance (to be appointed)

Vice-President (Health Sciences) J. D. Hamilton, M.D., F.R.C.P.(C)

Vice-President (Research Administration)
G. de B. Robinson, M.B.E., B.A., Ph.D., F.R.S.C.

Director of the Office of Research Administration
Miss S. Dymond, B.A., Q.C.

Vice-President and Registrar, and Secretary of the Senate
R. Ross, M..B,E., M.A.

Executive Assistant to the Vice-President and Registrar, and Assistant Secretary of the Senate W. Kent, M.A.

Vice-President and Graduate Dean
E. Sirluck, M.B.E., M.A., Ph.D., LL.D., F.R.S.C.

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Director of University Extension G. H. Boyes, M.A.

Director of Admissions E. M. Davidson, B.A.

Director of Student Awards Miss H. L. Reimer, B.A., B.Ped.

Secondary School Liaison Officer W. A. Hill

Director of Statistics and Records J. M. Tusiewicz, M.A.Sc., M.B.A.

Director of University Health Service
G. E. Wodehouse, M.C., M.D., F.R.C.P.(C), M.R.C.P.

Assistant Director of University Health Service — Women
Miss F. H. Stewart, B.A., M.D.

Director of Career Counselling and Placement Centre
A. W. Headrick, M.A.

Director of International Student Centre Mrs. K. Riddell, B.A.

Director of the Advisory Bureau
D. J. McCulloch, B.A., M.D., D.Psych., F.R.C.P.(C)

Director of Housing Service Mrs. M. G. Jaffary, B.A.

Director of University of Toronto Press M. Jeanneret, B.A., LL.D.

Director of Information K. S. Edey

Director of Alumni Affairs J. C. Evans, B.A.

Director of Development R. L. Jones

Warden of Hart House E. A. Wilkinson, B.A.

Director of Athletics and Physical Education — Men W. A. Stevens, B.S.

Director of Athletics and Physical Education — Women
Miss A. Hewett, B.Ed., P.E.

Faculty of Architecture,
Urban and Regional Planning
and Landscape Architecture 1969/70

Dean and Professor of Architecture
Thomas Howarth, Ph.D. (Glas.), F.R.I.B.A., F.R.A.I.C.

Chairman, Department of Architecture
P. Prangnell, A.A.Dip., M.Arch. (Harv.), A.R.I.B.A., M.R.A.I.C.

Chairman, Department of Urban and Regional Planning
A. J. Dakin, B.A.(S.A.), Ph.D. (Natal), M.R.A.I.C.,
A.R.I.B.A., M.T.P.I.C., M.T.P.I.

Chairman, Department of Landscape Architecture
R. A. Strong, B.L.A. (Ohio), M.L.A. (Harv.), C.S.L.A., A.S.L.A.

Secretary of the Faculty Miss A. Pyer

Secretary to the Dean Mrs. M. Forrest

Faculty Librarian Mrs. P. Manson-Smith, B.A., B.L.S.

Director Emeritus
H. H. Madill, O.B.E., V.D., B.A.Sc., F.R.A.I.C., Hon. F.A.I.A.

Professores Emeriti
E. R. Arthur, M.A., B.Arch., LL.D., F.R.A.I.C., F.R.I.B.A., R.C.A.
W. E. Carswell, B.Arch., M.R.A.I.C.
W. G. Raymore, B.Arch., F.R.A.I.C.

Special Lecturers 1969/70

R. W. Brunskill
Julien de la Fuente
Peter Goering
D. W. Harper
David Hicks
Ranjit Sabikhi

Teaching Staff 1969/70
Department of Architecture

R. J. K. Barker, B.Arch., M.R.A.I.C., M.T.P.I.C.
Professor of Architecture

T. Howarth, Ph.D. (Glas.), F.R.I.B.A., F.R.A.I.C.
Dean and Professor of Architecture

J. H. Acland, B.Arch. (Syr.), A.M. (Harv.), M.R.A.I.C.
Associate Professor of Architecture

A. J. Diamond, M.A. (Oxon.), M.Arch. (Penn.), M.R.A.I.C., M.I.S.A.A., A.R.I.B.A., M.A.I.P., M.T.P.I.C.
Associate Professor of Architecture

A. Elken, Dip. Ing. Arch. (Munich), M.R.A.I.C.
Associate Professor of Architecture

W. S. Goulding, B.A., B.Arch. (Harv.), M.R.A.I.C.
Associate Professor of Architecture

J. A. Hall, O.S.A., C.S.G.A.
Associate Professor of Architecture

S. R. Kent, B.Arch., M.Arch. (Liv.), M.R.A.I.C.
Associate Professor of Architecture

D. H. Lee, B.Arch. (McG.), M.Sc.(Ill.), A.R.I.B.A., M.R.A.I.C., P.Eng., M.E.I.C.
Associate Professor of Architecture

W. J. McBain, B.Arch., M.R.A.I.C.
Associate Professor of Architecture

G. A. Robb, B.Arch., M.R.A.I.C.
Associate Professor of Architecture

F. H. Watts, A.A.Dip., M.L.A. (Harv.), A.R.I.B.A., M.R.A.I.C.
Associate Professor of Architecture

R. Whiteley, B.Arch. (Man.), M.Arch. (Harv.), M.R.A.I.C.
Associate Professor of Architecture

G. P. Baird, B.Arch. (Tor.), M.R.A.I.C.
Assistant Professor of Architecture

S. N. Benjamin, B.Arch. (Man.), M.Arch. (Urban Design, Harv.), M.R.A.I.C.
Assistant Professor of Architecture

C. Corneil, B.Arch., M.R.A.I.C.
Assistant Professor of Architecture

M. Katz, B.A. (Tor.), B.Arch. (Tor.), M.R.A.I.C.
Assistant Professor of Architecture

V. W. Liacas, B.Arch. (Tor.), M.Arch. (Yale), M.R.A.I.C.
Assistant Professor of Architecture

B. Myers, B.S., B.Arch.
Assistant Professor of Architecture

D. F. D. Pinker, B.Sc. (Lond.), T.P. (Lond.), A.M.T.P.I., M.T.P.I.C., A.R.I.C.S., O.L.E.
Assistant Professor of Architecture (part-time)

K. H. Stevens, B.Arch. (Man.), M.Arch. (Urban Design, Harv.), M.R.A.I.C.
Assistant Professor of Architecture

J. A. Stinson, A.A.S.T.C., A.R.A.I.A.
Assistant Professor of Architecture

K. H. Wagland, B.Arch. (Manc.), M.Arch. (Calif.), A.R.I.B.A., M.R.A.I.C.
Assistant Professor of Architecture

R. W. J. Brown, B.Arch. (Tor.), M.R.A.I.C.
Lecturer in Architecture (part-time)

P. H. Carter, B.Arch. (Man.), M.Arch., M.C.P. (Penn.)
Lecturer in Architecture

K. Dunker, Dip. Ing. Arch. (Hann.)
Lecturer in Architecture (part-time)

D. P. Engel, B.A. (Columbia), B. Arch. (Harv.), M.Arch. (Harv.)
Lecturer in Architecture

A. P. J. Grumbach, D.P.L.G. (France)
Lecturer in Architecture (part-time)

J. A. Medjuck, B.A. (McGill), M.A. (Tor.)
Lecturer in Architecture (cross-appointed with Innis College)

J. N.S. Simpson, D.A. (Glas.), M.Arch. (Harv.), M.R.A.I.C.
Lecturer in Architecture (part-time)

Staff of Other Divisions 1969/70

C. Hershfield, B.Sc. (Man.), M.A.Sc. (Tor.), P. Eng., M.E.I.C., A.C.I.
Professor of Civil Engineering

B. J. Haynes, A.P.P., B.A.Sc.
Associate Professor, Civil Engineering

E. Karuks, M.A.Sc. (Tor.)
Lecturer in Civil Engineering

K. Meipoom, C.D., B.A.Sc., M.A.Sc. (Tor.), P. Eng., A.S.C.E., A.C.I.
Assistant Professor in Civil Engineering

E. I. Robinsky, B.Sc. (Am. Univ. Beirut), M.S. (Harv.), Ph. D.
Associate Professor in Civil Engineering

J. Schwaighofer, Dipl. Ing. (Graz.), M.S. (Penn. S.), Ph.D. (Penn. S.), Dr. Tech. (Graz.), P. Eng.
Professor of Civil Engineering

Major Contributors from Outside University 1969/70

R. Affleck, *Visiting Critic*
L. Ginsler, *Special Lecturer*
L. E. S. Green, *Special Lecturer*
A. R. C. Littlewood, *Visiting Critic*
J. Lorimer, *Visiting Critic*
E. Wotton, *Visiting Critic*

Visiting Lecturers and Consultants 1969/70

R. W. Anderson
P. Arthur
R. Baird
W. Billing
W. M. Birenbaum
E. Carswell
F. Carter
M. Charney
H. Cowan
M. Du Bois
A. Fleming
M. Fleming
J. Gould
G. Granek
W. Grierson
I. Grossman
D. Guinness
F. W. Helyar
H. Hertzberger
F. Lacka
M. Lumley
R. Markle
J. Markson
D. Melnik
G. McInnes
D. McKay
P. Meridew
W. Morden
M. Morgan
R. Moriyama
M. Nagler
E. N. Onen
A. Paine
N. Pau
E. Post
V. Rakoff
C. F. T. Rounthwaite
H. Sears
N. Seethaler
E. Soames
R. T. Tamblyn
R. Thom
R. Wurman
E. Zeidler

Fifth Year Tutors Outside the Department 1969/70

J. Baer
J. A. Bogdan
D. J. Bolton
J. H. Bonnick
E. Calb
D. Copper
R. Du Toit
G. Englar
T. Fitsialos
W. Freeman
F. Glazier
A. Grant
B. Grossman
J. Halpern
B. Malik
D. Runge
G. Wanzel
D. Warrilow
P. Wise
N. Wong

Teaching Staff
Department of Urban and
Regional Planning 1969/70

A. J. Dakin, B.A. (S.A.), Ph.D. (Natal), M.R.A.I.C.,
A.R.I.B.A., M.T.P.I.C., M.T.P.I.
Chairman and Professor of Urban and Regional Planning

E. Mattyasovszky, Ph.D. (Budapest), M.T.P.I.C.
Professor of Urban and Regional Planning

G. Hodge, B.A. (Br. Col.), M.C.P. (Calif.), Ph.D. (M.I.T.),
Assoc. A.I.P., M.T.P.I.C.
Associate Professor of Urban and Regional Planning

A. Waterhouse, B.A. (Manc.), Dip.T. & R.P., M.Sc. (Pl.),
Dr. Ing. (Berlin), M.T.P.I.C.
Associate Professor of Urban and Regional Planning

H. Blumenfeld, D. ès Arch. et Urb. (Montreal), Dip. Eng. (Darmstadt),
M.A.I.P., M.T.P.I.C.
Professorial Lecturer of Urban and Regional Planning

J. Hitchcock, B.A. (Haverford), M.R.P. (North Carolina), Ph.D. (North Carolina)
Assistant Professor of Urban and Regional Planning

R. Davidson, B.A. (Toronto), M.C.P. (Pennsylvania)
Lecturer in Housing (part-time)

E. Hardy, B.A. (Toronto)
Lecturer in Local Government Affairs (part-time)

I. Koroknay, Dip. R.M.C. (Budapest), Dip. T. & R.P. (Toronto)
Lecturer in Comprehensive Laboratory (part-time)

R. McCabe, C.D., B.A. (Toronto), M. Com. (Toronto), Dip. T. & R.P.
M. Sc.(Pl.) (Toronto), M.T.P.I.C.
Lecturer in Comprehensive Laboratory (part-time)

J. Paris, Ing. Dip. (Lille), Dip. T. & R.P., M.Sc.(Pl.) (Toronto)
Lecturer in Urban and Regional Planning (part-time)

J. I. Stewart, B.A. (Toronto), and M.B.A. (Toronto), M.A. (Toronto), Q.C.
Barrister-at-Law (Osgoode)
Lecturer in Land Economics

The following members of the University are also cross-appointed to the Graduate Department of Urban and Regional Planning

J. S. Dupré, B.A. (Ottawa), A.M. (Harvard), Ph.D. (Harvard)
Professor of Political Economy (cross-appointed)

R. M. Soberman, B.Sc. (Dal.), S.M. (Dal.), Ph.D. (MIT)
Associate Professor of Civil Engineering (cross-appointed) (on leave of absence)

Staff of Other Divisions 1969/70

A. P. Bernhart, B.A.Sc. (Graz.), D.Sc. (Graz.)
Associate Professor of Civil Engineering

M. M. Davis, B.Sc. (Qu.), M.Sc. (Purdue)
Associate Professor of Municipal Engineering

R. G. Rice, B.A.Sc. (Toronto), M.Sc. (M.I.T.)
Lecturer in Transportation Engineering

Staff of the Department of Landscape Architecture 1969 / 70

Richard Strong, B.L.A. (Ohio), M.L.A. (Harv.), C.S.L.A., A.S.L.A., O.A.L.A.
Chairman and Professor of Landscape Architecture

M. Hough, D.A. (Edin.), M.L.A. (Penn.), A.R.I.B.A., C.S.L.A., O.A.L.A., A.S.L.A.
Associate Professor of Landscape Architecture

E. G. van der Meulen, B.Sc. (Mich.), B.L.A. (Mich.), M.L.A. (Harv.), C.S.L.A., A.S.L.A., O.A.L.A.
Associate Professor of Landscape Architecture

E. H. Fife, B.Sc. L.A. (Rhode Island), M.L.A. (Harv.), A.S.L.A.
Assistant Professor of Landscape Architecture

F. Milus, B.S.L.A. (Penn.), M.L.A. (Mich.), C.S.L.A., O.A.L.A.
Assistant Professor of Landscape Architecture

Members of Staff of Other Divisions 1969/70

J. Hall, O.S.A., C.S.G.A.
Associate Professor, Department of Architecture

B. J. Haynes, A.P.P., B.A.Sc.
Associate Professor, Civil Engineering

E. Jorgensen, M.Sc.F.
Professor, Faculty of Forestry

W. A. G. Morsink, B.Sc.F. (Tor.), M.Sc.F. (Tor.)
Assistant Professor, Faculty of Forestry

J. A. Medjuck, B.A. (McGill), M.A. (Tor.)
Lecturer in Architecture (cross-appointed with Innis College)

J. H. Sparling, B.Sc., Ph.D.
Associate Professor of Botany

R. G. Tress, M.A.Sc.
Lecturer in Civil Engineering

Visiting Lecturers and Consultants 1969/70

G. Englar, B.L.A. (Mich.), M.L.A. (Harv.), C.S.L.A., A.S.L.A.
Special Lecturer

S. M. Moorhead, B.S.L.A. (Penn.), M.L.A. (Mich.), C.S.L.A., A.S.L.A.
Lecturer in Landscape Architecture

A. L. Murray, B.A., M.A., Ph.D.
Associate Professor in Environmental Studies, York University

J. Stansbury, B.L.A. (N.Y.State), C.S.L.A., O.A.L.A.
Lecturer in Landscape Architecture

HISTORICAL NOTES

During the session of 1966-67 the former School of Architecture assumed faculty status with three departments, Architecture, Urban & Regional Planning, and Landscape Architecture.

Instruction in Architecture was given first at the University of Toronto in 1890 when a Department of Architecture was established in the School of Applied Science and Engineering. The course was of four years' duration leading to the degree of Bachelor of Applied Science, a pattern that remained virtually unchanged under the administration of the first Professor of Architecture, C. H. C. Wright, an engineer by training.

The architectural profession in Canada developed rapidly after the first World War, and this was reflected in improvements to the educational programme. In 1922 the name of the degree was changed to "Bachelor of Architecture" and a master's degree was offered. In 1928 the course was extended from four to five years in conformity with educational practice at major British and North American universities.

C. H. C. Wright retired in 1934 after more than 40 years of service to the University; he was succeeded by Colonel H. H. Madill, an architect who had taught in the Faculty of Applied Science and Engineering since 1912. Under Colonel Madill's administration the department was renamed 'School of Architecture', and in 1948 became an independent division of the University with its own council although retaining close and cordial relations with the Faculty of Applied Science and Engineering.

During the next decade the School grew in size and strength. Enrolment increased from 23 in 1939 to 220 in 1946/47 when, on account of the larger number of demobilised servicemen, special accommodation had to be provided at Ajax. Between 1946 and 1956 the situation gradually stabilised, but applications for admission frequently exceeded capacity and the Board of Governors agreed eventually to limit enrolment to 60 in the first year.

During the session 1958/59 a system of selection was introduced to supplant the former practice of admitting those with the highest attainment in the senior matriculation examinations.

Originally the curriculum of the School was modelled largely upon the British pattern, but with a heavier lecture load, especially in Mathematics and Engineering subjects. A successful

feature of the programme was the sketch camp, formerly at Gull Lake and later at Dorset which gave an opportunity for students of the 2nd, 3rd, and 4th years to work together informally with staff specially selected for their skills in and knowledge of the graphic arts. Exhibitions of drawings, paintings and photographs and creative work in the form of plays and skits written and performed by the students played an important role in this educational programme.

The standard of undergraduate work generally was high and, in company with McGill and the University of Manitoba, the Bachelor of Architecture degree of the University of Toronto was 'recognized' in 1930 by the Royal Institute of British Architects as equivalent to that of recognized schools in the United Kingdom. This means that University of Toronto graduates can apply for election as associate members of the R.I.B.A., after passing an approved examination in professional practice.

A Master of Architecture degree was established in 1922 and the programme has been developed considerably in recent years. It is now possible for a candidate either to prepare a thesis on the subject of his own choice, working with a tutor, or to take a studio design course. (see page 63).

Colonel H. H. Madill retired in 1957, and Professor Milton Osborne of Pennsylvania State University was invited as Acting Director for one year in 1957/58: the present Dean was appointed Director in 1958. Under the new Faculty structure the Department of Architecture has its own Chairman, a position first held (1967/68) by John Andrews, architect of Scarborough College.

Formal instruction in Town and Regional Planning was introduced in 1933 when lecture courses were given to architects at undergraduate level.

The Division of Town and Regional Planning was established during the session 1954/55 under the direction of Professor Gordon Stephenson, and offered a one-year, postgraduate Diploma course, Professor Stephenson resigned in 1960 in order to return to the University of Western Australia, Perth, and Professor A. John Dakin who had joined the staff in 1959, was appointed acting head. In 1961 Professor Dakin assumed the responsibility of Head of the Division, and under his administration a two-year course leading to the degree of Master of Science in Urban and Regional Planning was estab-

lished in 1963. The Division is now a Department of the Faculty with Professor Dakin as its first Chairman.

In 1965 the Senate approved the establishment of a four-year, undergraduate programme in Landscape Architecture. This new division of the former School of Architecture was administered by Professor Michael Hough, as acting head. The division is now a Department of the Faculty with Professor Richard A. Strong its first Chairman.

In the winter of 1958 the School of Architecture was moved from its former home in the old SPS building, now demolished, to the Victoria Curling Rink on Huron Street, and the Division of Town and Regional Planning occupied an old house on St. George Street. Three years later when both buildings were scheduled for demolition a second move was made, this time to the former School of Dental Surgery at 230 College Street, the present home of the Faculty. This time working conditions greatly improved; it was possible to set up a good library with a qualified librarian, a construction laboratory, workshop, photographic darkrooms, exhibition areas, sample room and a studio for a resident artist. Seminar rooms, lecture rooms and good studio space were provided for students of all departments.

In these improved circumstances the Faculty has been able to establish more firmly its identity as an active and integral part of the University and it is hoped that before too long it may be housed in a building designed for, and worthy of, the environmental disciplines it represents.

UNDERGRADUATE ADMISSION AND REGISTRATION

Full details of the University of Toronto undergraduate admissions are contained in the Undergraduate Admission Handbook 1970/71 obtainable on request from the Office of Admissions, University of Toronto, Toronto 181, and available in all Ontario secondary schools. Inquiries about admission to the Faculty of Architecture, Urban and Regional Planning and Landscape Architecture should be directed to the above-mentioned office.

The right is reserved to limit the number of students admitted to any course in the Faculty. Selection will be made mainly on academic standing secured in Ontario Grade 13 or equivalent examinations, and aptitude for creative design.

1 Admission Requirements

Admission to the courses leading to the degrees of Bachelor of Architecture (B.ARCH), Bachelor of Landscape Architecture (B.L.ARCH) for Ontario secondary school students depends upon:

Ontario Grade 13 Requirements

Standing in the following subjects, with an average of 60% for Architecture and Landscape Architecture:

English, Maths A and optional subjects comprising three credits selected from the Grade 13 subjects approved for purposes of admission to the University.

It is strongly recommended that Ontario Grade 13 candidates have Grade 12 standing in at least six subjects(excluding Physical Education). The subjects chosen should include at least five of the following subjects and at least one subject from each of the four groups.

i / English
ii / French; German; Greek; Italian; Latin; Russian; Spanish
iii / History (Parts 1 and 2); Geography (Parts 1 and 2)
iv / Mathematics (Parts 1 and 2); Science (Physics and Chemistry)

Notice to candidates offering certificates other than Ontario Grade 13

The following certificates are usually accepted as equivalent to Ontario Grade 13 although individual subjects cannot always be equated. Candidates offering Senior Matriculation programmes from provinces other than Ontario must offer a full programme from their final secondary school year and satisfy the subject requirements specified for the course of their choice. Specific details on subjects and standards required for the course must be requested well in advance of the application deadline.

Canada

Alberta, Manitoba, Nova Scotia, Saskatchewan: Grade 12
British Columbia, New Brunswick: Grade 13 or First Year University
Newfoundland: First Year Memorial University
Prince Edward Island: First Year Course at University of Prince Edward Island
Quebec: Senior High School Leaving Certificate; English

Catholic Senior High School Leaving Certificate (5th Year High – Grade 12); Other certificates will be considered.
First Year C.E.G.E.P.

United States, Central and South America
First Year University standing (normally 30 semester hours) in acceptable subjects from an accredited institution. Students with high school diploma and C.E.E.B. Advanced Placement examinations will be considered.

England, West Indies, East and West Africa, Hong Kong
Standing in five subjects of which at least two must be passed at advanced level; or passes in four subjects of which at least three must be passed at advanced level on the following certificates:
i / General Certificate of Education
ii / School and Higher School Certificate
iii / University of Hong Kong Matriculation Certificate
iv / Hong Kong English School Certificate from 1965, renamed the Certificate of Education (English) in 1968. Standing in advanced level must be offered in addition to it. Other certificates will be considered.

India, Pakistan
Bachelor's degree with high standing.
A Graduation (Maturity) certificate from final year of secondary school is required from most European and Commonwealth countries.

2 English Facility
Candidates whose mother tongue is not English may be required to meet an appropriate standard in a recognized test of English facility such as the University of Michigan English Language Test, the Certificate of Proficiency in English issued by the University of Cambridge or Michigan or the Test of English as a Foreign Language (T.O.E. F.L.).

3 Mature Students
Candidates twenty-five years of age or over, residents of Ontario for one year, who have a sound academic record and a minimum of 60% in at least one Grade 13 subject or its academic equivalent, will be considered for admission as mature students.

4 Application Procedures

All candidates must submit an application form and supporting documents to the Office of Admissions, University of Toronto, Toronto 181. The application form is obtained from the Office of Admissions.

Supporting documents include all final secondary school certificates held. These certificates must indicate the subjects studied and grades obtained. If a certificate is not available at the time of application, candidates must indicate the exact name of the certificate to be presented for admission, and the subjects included therein, as well as the approximate date available. A notarized English translation must accompany certificates which are in a language other than English or French.

In addition a student who has previously attended a University must submit the following:

i / Official transcripts issued by the University or College previously attended, giving in detail the courses completed, with the standing and grades in each. Transcripts or a supporting letter from the Registrar of the University or College must indicate that the candidate has been granted honourable dismissal and is eligible for re-admission to the institution concerned in the session for which he seeks admission to the University of Toronto.

ii / Official statements or calendars giving full information on the content of the University courses covered by the transcripts submitted.

For application forms and further information about admission requirements, consult the Office of Admissions, stating in the first letter what credentials will be offered with a listing of subjects and grades obtained.

5 Standardized Tests

Ontario students will present the results of the aptitude and applied achievement tests offered. Other students may improve their competitive position by taking the aptitude test of the College Entrance Examination Board, Box 592, New Jersey 08540, U.S.A.

All candidates are recommended to take the Architecture School Aptitude Test prepared and administered by the Educational Testing Service, Princeton, New Jersey, U.S.A. from whom information may be obtained.

6 Final Date for Completed Applications: June 1

7 Early Admission

(Ontario Grade 13 students only.)

To be considered for Early Final Admission, applications must be received from the schools by April 1, 1970. Soon after June 11, offers of Early Final Admission will be made to qualified applicants.

8 Candidates Who Have Previously Failed in University Work

Candidates with a previous failure in university work may be considered under special circumstances; candidates with two previous failures are normally refused admission.

9 Procedure for Registration

Detailed instructions concerning Registration will be mailed to returning and newly admitted students before the beginning of each academic year.

10 Health Requirements

Every person admitted to the University as an undergraduate must, at the time of his or her first medical examination by the University Health Service, present satisfactory evidence of successful vaccination within three years prior to the date of the examination, or must be vaccinated by the examining physician.

11 Physical Education

The University requires that each student in his or her first year at the University take a medical examination given by the University Health Service. In addition, each first year woman student, unless exempted as provided below, must register for and satisfactorily complete a swim test and the required programme in Physical Education. Any woman student, unless exempted, who does not satisfactorily complete the Physical Education requirements *before* advancing to the second academic year of her course shall either (1) register for and satisfactorily complete the requirement *before* the end of the second academic year of her course, or (2) pay an additional fee of $50 to be assessed in February of the session in which she is registered in the second academic year.

Physical Education credits may be earned by participation in instructional classes, swimming, life saving and water safety classes, intercollegiate and intramural sports.

Exemptions: (1) One year's satisfactory standing in Physical Education at this or any other University. (2) Admission by advanced standing to second or a higher year at this University (automatic exemption). (3) If age is 25 years or more. (4) Ex-military service (Permanent Force). (5) Provisional acceptance by the U.N.T.D., C.O.T.C., or U.R.T.P. followed by satisfactory completion of one year's service. (6) Exemption by the University Health Service. (7) Special consideration.

To Claim Exemption: Report by October 31 to Room 231, Benson Building, 320 Huron Street.

FEES AND EXPENSES

In view of increasing costs of supplies and labour, residence dues and other charges set forth in this calendar are subject to change by the Board of Governors.

Annual Fees

1 A student who desires to enrol in the Faculty of Architecture, Urban and Regional Planning and Landscape Architecture is required to pay at least the first term instalment of fees on or before the opening date of the session, and before he can receive his registration card from the Secretary.

2 The second term instalment of fees, if not already paid, is payable on or before January 15. After this date an additional fee of $3 per month or portion thereof (not exceeding $10) will be imposed until the whole amount is paid. All fees for the session must have been paid in full before the student can be admitted to the annual examinations.

3 In order to avoid delay in registration at the opening of the session it is recommended that at least the first term instalment of fees be forwarded by mail as early as possible in September, together with a fees form in duplicate, as provided and filled out by the student, giving his full name, course, year etc.

4 University fees are payable at the Office of the Comptroller (see booklet, General Information, sent to all students).

Remit by certified cheque, money order or personal cheque payable to the University of Toronto at par and mail to:

University of Toronto
Office of the Comptroller
Fees Department
Toronto 181, Ontario

indicating Faculty and Student Number.

5 Late Registration Fee: Any student who registers after the last date for normal registration in his or her own faculty or school is required to pay a late registration fee of $10 plus $1 for each day of delay to a maximum of $20.

6 Each undergraduate enrolled in the Faculty of Architecture, Urban and Regional Planning and Landscape Architecture must pay annual fees to the Office of the Comptroller according to the schedule below; the total fee in each case is made up of the academic fee and incidental fees; all incidental fees are payable in the first term.

Undergraduate Course Fees

	*Academic Fee	†Incidental Fees	Total Fee (If paid in one instalment)	First Term Instalment	Second Term Instalment Due on or before Jan. 15
Men	$650	$67	$717	$392	$328
Women	650	42	692	367	328

*The Academic Fee includes the following fees: Tuition; Library and Laboratory Supply; one Annual Examination; Degree; Laboratory Fee.

†The Incidental Fees include the following: For men – Hart House; Students' Administrative Council; Athletic; Health Service; Architectural Society (including Athletics). For women – Student's Administrative Council; Athletic; Health Service; and Architectural Society.

Diploma Course Fees

	Academic Fee	Incidental Fees	Total Fee (if paid in one instalment)	First Term Instalment	Second Term Instalment Due on or before Jan. 15
Men	$425	$30	$455	$243	$215
Women	425	10	435	223	215

Other University Fees

Each student is required to pay to the Office of the Comptroller at the opening of the session, or as otherwise specified, such of the following fees as may be required of him:

Advanced Standing Fee

Each student who has been admitted to advanced standing from another university or college, must pay a fee of $10.

Withdrawals

Adjustments for withdrawals are made up to the 24th week only.

Supplementary Examination Fees

Each candidate for a supplemental examination is required to pay to the Office of the Comptroller the fee of $10 for the first subject and $5 for the second subject, including laboratory subjects. For each supplemental examination in a laboratory subject requiring special supervision, there is an additional fee of $10. The additional laboratory supplemental fee should not be paid until the candidate is notified by the Secretary.

Special (Full-Time) Student's Fee

Students who have failed in Studio Work and are required to repeat the work during a term of a subsequent session, will be required to pay a fee of $165 at the time of registration.

Summary of Undergraduate Student's Expenses

The following approximate statement of expenses will give the undergraduate student a general idea of the cost of obtaining an education in the Faculty of Architecture, Urban and Regional Planning and Landscape Architecture, exclusive of personal expenses:

Fees, see schedule page 24	
Board and Lodging, per week	$ 30
Photographic Equipment in the First Year	$ 85
Instruments in the First Year	$ 40
Text Books in Each Year	$ 40
Drafting and Photographic Supplies in Each Year	$170
Field Trips (Part of the Undergraduate Programme)	$150
*Survey Camp	$ 40

EXAMINATIONS AND GENERAL REGULATIONS

Annual Examinations

1 Annual examinations will be held in April except as provided in paragraph 2 below.

2 Annual examinations will be held at the end of the first term in all subjects completed during the first term.

3 Promotions from one year to another are made on the results of term work and the annual examinations. A student proceeding to a degree must pass in all term work and examinations in all subjects of his course, and at the periods arranged by the Council.

*Department of Architecture students only.

4 A pass standing requires a mark of 50% in each subject, and an average of 55% on all subjects. Candidates who have attained the required average and who have failed in not more than two subjects will be required to pass supplemental examinations in those subjects to secure pass standing.

In order to remove a supplemental in studio work, a student will be required to be in full attendance during the second term of a subsequent session and successfully complete a special course. Such students will be classed as Special (Full-Time) Students.

5 Honours will be granted a student who, at the annual examinations, passes in all written and studio subjects, and who also obtains an overall average of 75%.

6 Honour graduate standing will be granted to those who obtain honours in the final year and in one previous year.

7 A student who fails in the work of any year or withdraws during the session and wishes to repeat the work of the year, must petition the Council for permission to do so.

8 A student will not be allowed to repeat the work of more than one year in his entire undergraduate course, except by petitioning a case of illness or unusual circumstances. (See also Regulations of the University Concerning Penalties for Unsatisfactory Work by Students, page 28)

9 A student who has failed to obtain standing at the annual examinations and who is repeating the year, must repeat the term work in each subject of the course unless he petitions Council and is exempted from a subject or subjects in which he may have attained high standing.

10 Petitions for consideration with regard to absence from the Annual or Supplemental examinations on account of illness or other exceptional circumstances, must be filed with the Secretary of the Faculty on or before the close of examinations, together with either a doctor's certificate stating that the candidate was examined at the time of the illness, or other certified evidence acceptable to Council.

11 A student whose attendance at lectures, laboratories, or studios, and whose work is deemed by the Council of the Faculty to be unsatisfactory, may have his registration cancelled at any time by the Council of the Faculty.

12 In the case of illness, mishap, or other unusual circumstances during the session for which a student proposes to claim special consideration, a doctor's certificate, or other evidence acceptable to the Council of the Faculty, must be

submitted to the Secretary before ten days' absence have been recorded.

13 A student will not be allowed to write any examinations if he has not paid all fees and dues for which he is liable at that time.

Supplemental Examinations

1 A student who has failed in his annual examinations and one supplemental examination of a subject, will only be permitted further registration or examinations in the Faculty if the Council of the Faculty deems this desirable.

2 The supplemental written examinations will be held in August. Application (on the prescribed form) to take such examinations, including practical ones, must be received from the candidate by The Faculty Secretary not later than July 2. (See fees section) Council reserves the right to reject applications of, or impose penalties upon, those failing to comply with these requirements.

3 The special course for students failing in Studio Work will begin on the opening day of the second term. Applications for this course must be received by the Secretary not later than the first day of December.

4 If a candidate is required to write an annual examination as a supplemental, his application must be received by the Secretary and his fee by the Chief Accountant, for the December examinations not later than the first day in December and for the April examinations not later than the first day in March.

Term Tests

Term tests may be held in any subject and at any time at the discretion of the instructor, or by order of the Council, and the results of such tests may, if the Council so decides, be incorporated with those of the annual examinations in the same subjects.

Extra-curricular Activities and Academic Credit

It is desirable for students to engage to a reasonable extent in extra-curricular activities in order that they may not become too narrowly professional in interests and outlook, but it will be obvious that no academic credit or consideration can be given for such activities. Some offices in the student organizations require considerable amounts of time for the proper per-

formance of the duties connected with them, and it is therefore strongly recommended that students, particularly those whose academic records are not high, consult the Dean or a senior member of the Staff before allowing themselves to be nominated for such offices.

Note: All models, drawings, essays and theses become the property of the Faculty. The majority are returned immediately after the annual examinations but some are kept for exhibition purposes because of their excellence or for record purposes. Even so, they are available to the student for a limited period when required.

Procedure for Withdrawals or Transfers

A student who wishes to withdraw or to transfer his course or division in the University must complete the proper form at the office of the Faculty Secretary. Students who wish to withdraw during the session must do so prior to February 15 or will be considered to have failed.

Regulations of the University Concerning Penalties for Unsatisfactory Work by Students

In cases of unsatisfactory work of a very serious nature, the faculty Council may recommend to the Senate that a student shall be debarred from the University.

A faculty Council should, except in very exceptional circumstances, refuse to re-admit to that faculty any student who on two occasions fails to secure the right to advance to a higher year in that faculty or a like faculty.

A faculty Council may for unsatisfactory work suspend a student from regular attendance in that faculty for a given period of time not exceeding 2 years and/or until the satisfaction of other conditions as it may see fit. Upon satisfying the conditions of the suspension the student shall be entitled to re-enrolment in that faculty.

Any student who withdraws after February 15, or who does not withdraw but does not write the annual examinations, will be regarded for the purposes of these regulations as having failed his year.

Appeals

A student wishing to appeal to the Senate against a decision of a faculty or school council should consult the secretary

of the faculty, or the office of the University Registrar about the preparation and submission of his petition to the Secretary of the Senate.

STUDENT AND GRADUATE ORGANIZATIONS

The University of Toronto Architectural Society

The Architectural Society is the undergraduate organization of the Faculty of Architecture, Urban and Regional Planning and Landscape Architecture. Its concern is with better people through a working partnership with the staff. By financing the visits of architects whom the students feel to be of particular value, and by organizing whatever other educational sessions (such as a film series) as are seen to be of interest, the Society augments the organized academic program.

Social functions and sponsorship of athletic teams participating in the University programs are other activities intended to supplement the extra-curricular life of the students.

These activities are organized by an Executive Committee including members from all the years. Through its meetings (open to all students), it formulates the official voice of the student body and is the means of communication between students and the Faculty Council, the staff and student groups of other Faculties and the University. For example, two committees are of special interest: one, the Staff/Student Forum (comprising about 40 people) meets twice a month to conduct a 'round-table' discussion on the quality of education being achieved in the Department of Architecture. Here issues are discussed as they occur during the year and through dialogue greater understanding is achieved on both sides.

The second, the Faculty House Committee, is concerned with the quality of the physical environment in which we work. Improvement of facilities and equipment is a very critical ongoing situation and proceeds through the efforts of this staff-student group. Both Committees have had great success this year and have added immensely to the life of the Faculty.

The Architectural Alumni Association

The Architectural Alumni Association was formed in 1950 as a component body of the University of Toronto Alumni Association. All undergraduates in the Faculty are members of

this Association. During Spring Convocation the Alumni invites the graduates to the Silver Ring Dinner and formally welcomes them into the Alumni.

There are no fees to join this Association. Money is made available through the Varsity Fund which is an annual campaign to which alumni contribute.

The Alumni Association has two members on the University of Toronto Alumni Directorate. It also appoints a representative to the Senate. Through its annual budget the Alumni Association makes funds available to the Faculty, and for the last two years this money has helped subsidize the cost of sending students to the Annual R.A.I.C. Convention.

COLLEGES

With the establishment of New College and Innis College, which are open to students of all faculties, it is now possible for students of the Faculty of Architecture, Urban and Regional Planning and Landscape Architecture to become members of a college. Membership in a college is not obligatory, and application for membership is at the option of the student.

Students entering the First Year will receive application forms for college membership along with their offers of admission to the Faculty. Those interested in college membership should return completed forms with their letters of acceptance and tuition deposit. A college fee of $15 is required of all students accepted for membership.

New College

New College is a multi-faculty co-educational college; in addition to students from the Faculty of Arts and Science those from other Faculties and Schools are eligible for membership. This gives students from all divisions of the University the opportunity to participate in the activities of a college and to associate with students in other fields of study. Tutorial classes are provided for First Year students in some subjects.

New buildings, centrally located on the west campus, provide academic, social and dining facilities for all members of the College and in addition accommodate some 675 men and women in residence.

Students applying for membership in the College who wish accommodation in the Residence must apply on the prescribed form which may be obtained from the Dean of Men or Dean of Women, New College.

Innis College

Innis College was constituted on July 1, 1964, and admitted its first students in the following September. It is a multi-faculty college of the University of Toronto, and includes undergraduate students in all Faculties and Schools of the University.

A special feature is the Writing Laboratory. This service offers assistance to Innis College students in the skills and methods of writing essays and other academic reports. A staff of experienced teachers is available to give individual instruction.

In September, 1969 Innis College introduced experimental courses which focus on contemporary themes and problems.

The College has limited residential space available in houses on campus. Separate application for residence accommodation must be made directly to the Residence Co-ordinator of Innis College.

Students entering First Year will be invited to apply for membership after they have been accepted into their Faculty or School. Students entering the Second to Fourth Years who wish to join the College should obtain an application form from the Registrar, Innis College, University of Toronto.

A special college fee of $15 is payable to the Chief Accountant of the University of Toronto. This payment is made after the applicant has received notice of his acceptance by Innis College.

LODGING AND BOARD

Housing Service

To assist University students and staff who may not be accommodated in the residences or who choose to live off-campus the Housing Service, 49 St. George Street, 928-2542, maintains a registry of accommodation reported to it by householders. Inclusion in the registry does not necessarily imply inspection or approval. As the accommodation is for immediate occupancy it can not be reserved in advance.

It is advisable that out-of-town students plan to arrive in Toronto several days in advance of registration and be prepared to stay temporarily at a hotel while they check the accommodation available.

Married Student Apartments

There is an apartment complex, consisting of one and two

bedroom units, located near the University, which is available for rent to married students. Applicants must be registered full-time day students. For further information and application, write University Housing Service, 49 St. George Street.

Campus Co-operative Residence Incorporated offers residence and apartment accommodation for graduate and undergraduate students. Total occupancy is 300 in residence, half male, half female, and 100 in apartments. Meals are provided, and non-residents are invited to eat at the Co-op Dining Rooms. Since the University of Toronto has no official connection with Campus Co-operative Residence, Inc., inquiries should be addressed direct to:
Campus Co-operative Residence Incorporated
395 Huron Street
Toronto 5, Ontario Tel: 964-1961

Rochdale College was opened in September, 1968, to offer student accommodation of varying forms. Single and double rooms, suites, and apartments will be offered at reasonable rates. Total accommodation will be about 850 students, both male and female. A large cafeteria is contained within the building. Students may take advantage of the educational programme of Rochdale College on either a full- or part-time basis if they so desire. Rochdale College will be operated on the Co-operative System. Since the University of Toronto has no official connection with Rochdale College, all inquiries should be addressed direct to
Rochdale College
Reservations Office
Suite 211
341 Bloor Street West
Toronto 5, Ontario Tel: 921-3168

Devonshire House
Devonshire House is a Hall of Residence for men within the University. It is designed primarily for undergraduates in the Professional Faculties, but some Arts & Science men and graduate students are included among its members. Its three houses form a quadrangle facing Devonshire Place, close to the heart of the Campus. Established in 1907 as a gift to the University, the House combines old and new in its physical facilities as well as its modus operandi. Traditional emphasis

on good academic performance is joined with an active college community life and a high degree of self-government, providing favourable opportunities for advancing the general education of its members. The Faculty is represented by the Dean and resident Dons, drawn from various academic departments, and who are available to advise and assist members.

The facilities of the Residence include common rooms, a library, a music room, games rooms, kitchenettes, a laundry room, a television room, and a mini-gym. Since there is no dining hall, many members eat at Hart House nearby. It is customary for freshmen to share a double room, with the single rooms and suites being occupied by more senior students. Basic furnishings are provided but members may bring additional suitable items with them.

Requests for application forms and other inquiries should be directed to the Secretary to the Dean, Devonshire House, University of Toronto. It is advisable that application for residence be made as early as possible.

The House is also open during the summer months.

Tartu College

Tartu College, the new student residence, located at 310 Bloor St. West, is offering accommodation to single male and female graduate and professional faculty students. 444 single rooms and 15 double rooms will be available. Suites for groups of six will have their own cooking and dining facilities. Single room will be $85 – $88 per month, and double room $75 per month. A rebate system brings the rent down to $70 and $60 per month respectively, if the residents do their own cleaning and stay the full 12 months. A large cafeteria is located on the main floor. There are parking facilities available.
All inquiries should be addressed direct to:
Tartu College (Tel. 925-4747)
310 Bloor Street West,
Toronto 5, Ontario

St. Andrew's – University Day Nursery

This day nursery, established and supported by the University of Toronto, the Graduate Students' Union and the Students' Administrative Council, provides pre-school education and day care facilities for children of University of Toronto students. Children aged two to five years are accepted.

The nursery, located at St. Andrew's United Church, 117 Bloor Street East, is well equipped and staffed, and is licensed under the Day Nursery Act, Province of Ontario. It operates from 8:30 a.m. to 5:45 p.m. throughout the winter and summer academic sessions. Fees are reasonable, and noon meals and morning and afternoon snacks are provided.

Priority of enrolment is given to children of University students, although children of other members of the University community will be considered.

Information may be obtained from the nursery (telephone 921-7078) or from the School of Graduate Studies.

AWARDS

Through the generosity of friends of the University, governments, professional, and commercial organizations, encouragement has been given to work in various branches of studies by establishing the following scholarships, prizes, bursaries, and medals.

Matriculation students are advised to consult the University of Toronto Admission Awards Calendar for complete details of awards available to students entering this Faculty. This calendar is available for reference in all secondary schools, or may be obtained from the Office of Student Awards.

The funds available from any undergraduate award will not be paid to the winner unless he registers and is in regular attendance in the Faculty of Architecture, Urban and Regional Planning and Landscape Architecture for the academic year immediately following the award. The Council may, at its discretion, award unallocated funds to a suitable candidate in the same or later session.

Awards granted to members of the graduating class other than those for graduate study, will be paid in one instalment as soon as possible after the granting of the award. Awards in other years will be paid in two equal instalments, the first on November 20 and the second on January 20.

As the value of an endowed award is dependent on the actual income of the fund, it is probable that the value of certain awards at the time of payment will differ slightly from the amount stated in the calendar. In those cases where the amount of the award is not payable from income earned on an endowed fund, payment will be dependent on the receipt of the amount of the annual award from the donor.

ADMISSION SCHOLARSHIPS, BURSARIES AND AWARDS

Ontario Students
Admission scholarships and bursaries are awarded by the University, the Provincial Government and other interested bodies. Complete information about conditions and application procedure is contained in the Admission Awards booklet, available at all secondary schools or from the Office of Student Awards, Simcoe Hall, University of Toronto.

Non-Ontario Students
All non-Ontario students should apply to the Office of Student Awards, Simcoe Hall, University of Toronto. A limited number of scholarships are reserved for students living outside the Province of Ontario, but as competition is keen such students must not count on receiving assistance but are advised rather to ensure that they have sufficient funds from their own government or from private sources to cover all probable expenses.

Available to Students in All Undergraduate Years
Ontario Student Awards Program
Canada Student Loans Plan
Professor C. H. C. Wright Student Assistance Fund Loans
Alumni Loan Fund*
Atkinson Incourse Bursaries*
Proctor and Gamble Bursary Plan
Family Bursary Fund*
I.B.M. – Thomas J. Watson Memorial Bursary Fund
Interprovincial Pipe Line Company Bursary Fund*
Birks Family Foundation Fund
The Mabel Melissa Johnston Bursaries

Available to Students Completing the Second Year in Architecture	
Ontario Association of Architects Scholarship**	$ 200
Booth Brick Limited Scholarship**	200

Available to Students Completing the Third Year in Architecture	
Ontario Association of Architects Prize**	$ 100

*Not available to students in First Year.
**Awarded at annual examinations.

Toronto Brick Company Scholarships**	First	300
	Second	100
Queenston Quarries Division of Steetley Industries Limited Scholarship**		200

Available to Students Completing the Fourth Year in Architecture

Canadian Pittsburgh Industries Limited Scholarships**	First	$ 150
	Second	100
Ontario Association of Architects Exhibitors Prize		100
Primeau Argo Block Company Limited Scholarship**		200
CMHC Travelling Scholarship		1,370
Eric Ross Arthur Scholarship**		1,000
Formica Travelling Scholarship		1,000

Available to Graduates in Architecture

Pilkington Travelling Scholarship		$4,000
Anaconda American Brass Limited Scholarship**		300
George T. Goulstone Fellowship in Architecture**	approx.	500
Toronto Architectural Guild Medal**		
Royal Architectural Institute of Canada Medal**		
R.A.I.C. College of Fellows Scholarship		$2,000
Jules F. Wegman Fellowship**	approx.	2,000
Central Mortgage and Housing Corporation Fellowships		1,500
Toronto Chapter OAA Book Prizes** (All Years)		

Ontario Student Awards Program

All students who are residents of Ontario and who satisfy the admission requirements of a Canadian university or an eligible post-secondary institution in Ontario may apply for an award under this Program. To receive an award a student must establish a need for assistance and enrol in an eligible institution in a course other than Divinity in the year of award. An award under this Program will be made to the extent of established need in a combination of a nonrepayable grant and a Canada Student Loan. Application forms are available at all post-secondary eligible institutions.

Canada Student Loans Plan

Full details of this Plan are available in a brochure issued by

**Awarded at annual examinations.

the Government of Canada which may be obtained at all eligible post-secondary institutions and secondary schools in Ontario. Students not eligible under the Ontario Student Awards Program may apply for a Canada Student Loan provided they are attending an institution in Canada or abroad which has been designated as eligible for Canada Student Loans only. The application form for the Ontario Student Awards Program is also used for the Canada Student Loans Plan.

Atkinson Incourse Bursaries
Atkinson Incourse Bursaries, gift of the Atkinson Charitable Foundation, are awarded annually to students in the second or higher years of their course. Applicants must have at least Second Class Honours in the final examinations of the preceding year, demonstrate financial need and be a resident of the Province of Ontario. Applications must be submitted through the Secretary of the Faculty on the University incourse awards form by October 15.

The University of Toronto Alumni Loan Fund
This fund comes from subscriptions received originally in 1919 and in succeeding years from graduates of the University and is administered by the University of Toronto Alumni Association.

Loans are available to undergraduate and graduate students enrolled in a full-time course at the University of Toronto, in second and subsequent years.

Particulars may be obtained from the University of Toronto Alumni Association, Alumni House, 47 Willcocks Street, Toronto, or from the Secretary of the Faculty.

The Mabel Melissa Johnston Bursaries
Provided by a bequest of the late Mabel Melissa Johnston, one or more awards to a total value of approximately $500 annually are available to students registered in any year of a full-time course who have a minimum of Second Class or B standing and who are in need of financial assistance. Application should be made on the University in-course award form submitted to College Registrar/Secretary of the Faculty or School, on or before October 15.

Family Bursary Fund
The Family Bursary Fund provides one or more bursaries to a

total annual value of the income from a capital sum, $20,000 for students registered in the Second or higher year of any degree course, who have satisfactory academic standing and demonstrate financial need. Application should be made through the Faculty Secretary by October 15.

Birks Family Foundation Fund
One or more bursaries of varying value to be awarded as funds become available to a student registered in the University. Application should be made through the Faculty Secretary by October 15.

I.B.M. Thomas J. Watson Memorial Bursary Fund
The International Business Machines Company Limited has made available one or more bursaries of a total annual value of $1,000 to students registered in any year of a full-time course in the University who have standing satisfactory to the Committee of Award and who demonstrate financial need. Application should be made through the Faculty Secretary by October 15.

Interprovincial Pipe Line Company Bursary Fund
The Interprovincial Pipe Line Company provides an annual bursary fund for students registered in the Second or higher year of a degree course in the University of Toronto who obtain standing satisfactory to the Committee of Award and who are in need of financial assistance in order to continue their studies. Application should be made through the Faculty Secretary by October 15.

Proctor and Gamble Bursary Plan
Proctor and Gamble Bursaries, the gift of the Proctor and Gamble Company of Canada, are awarded annually to students in all years. Applicants must have at least Second Class Honours in the final examinations of the preceding year and demonstrate financial need. Applications must be submitted through the Faculty Secretary by October 15.

Professor C. H. C. Wright Student Assistance Fund
A friend of the late Prof. C. H. C. Wright, first Head of the School of Architecture, has established a loan fund with a gift of $1,000, with provision for additional funds from other donors. To date Mrs. Harry Davidson, a graduate of the

School, has added the sum of $1,200 and the General Concrete Ltd. the sum of $750. Repayments of loans begin one year after graduation. Interest at 3% begins at graduation. Application must be made through the Faculty Secretary.

AWARDS FOR STUDENTS IN ARCHITECTURE

Second Year

Ontario Association of Architects Scholarship

The Ontario Association of Architects offers a scholarship of $200 to the student of the Second Year in the Department of Architecture who, at the annual examinations of that year, obtains the highest honour standing in design.

Booth Brick Limited Scholarship

Booth Brick Limited offers a scholarship of $200 to the student in the Second Year who, at the annual examinations, obtains the highest honour standing in the subjects of the Second Year.

Third Year

Toronto Brick Company Scholarships

The Toronto Brick Company offers two prizes in the value of $300 and $100, to the students in the Third Year who obtain highest and second highest honour standing respectively in design of the Third Year; in the event that only one student qualifies, the sum of $400 may be paid to that student at the discretion of the Council.

Ontario Association of Architects Prize

The Ontario Association of Architects offers a prize of the value of $100 to the student of the Third Year who, at the annual examinations of that year, obtains the highest standing in subjects deemed by the Faculty Council to relate to 'Building Construction'.

Queenston Quarries, Division of
Steetley Industries Limited Scholarship

The Queenston Quarries, Division of Steetley Industries Limited, offers a prize of $200 to the Architectural student who attains the highest aggregate standing at the annual examinations of the Third Year.

Fourth Year

The Eric Ross Arthur Scholarship

In 1965 Mr. John B. Parkin made a generous donation of $20,000 for the establishment of this scholarship for travel abroad which will be awarded to the student in the fourth year who obtains aggregate honour standing and the highest honour standing in Design. The scholarship will be the annual income from the investment and will be approximately $1,000.

Canadian Pittsburgh Industries Limited Scholarships

Canadian Pittsburgh Industries Limited offers two scholarships of $150 and $100 in the Fourth Year to the two students who obtain highest and second highest honour standing respectively in Design in the Fourth Year; in the event of only one student qualifying, the sum of $250 may be paid to that student at the discretion of the Council.

Ontario Association of Architects Exhibitors Prize

The exhibitors of building products at the O.A.A. annual convention, present an annual prize of $100 to the student in the Fourth Year who prepares the Building Report of the highest standard.

Primeau Argo Block Company Limited Scholarship

The Primeau Argo Block Company Limited offers an award in the amount of $200 to the student who obtains the highest aggregate honour standing in the subjects of the Fourth Year.

CMHC Travelling Scholarships

The Central Mortgage and Housing Corporation awards a scholarship to an undergraduate in each of the Schools of Architecture in Canada who has completed Fourth Year and is planning to enter his Fifth or final year. The students will be chosen on the basis of scholastic achievement and marked interest in housing as shown by their work and their formal application for the scholarship, and they should be Canadian citizens or landed immigrants.

This scholarship programme will provide for travel to selected housing projects in Canada and the United States followed by paid employment at CMHC Head Office. An advance will be paid at the commencement of the tour. On receipt of a satisfactory report on the summer's activities an award of $500 will be made.

Application must be made by letter to the Faculty Secretary not later than March 15.

Formica Travelling Scholarship
Cyanamid of Canada Limited offers a scholarship of $1,000 for travel, to be awarded to the student in fourth year with high standing in design, and evidence of special interest in and aptitude for interior work, furnishing and colour. An applicant must express his intention to practise his profession in Canada. A letter should be submitted to the Faculty Secretary by March 15 outlining a specific topic of study and an itinerary.

Fifth Year
The Pilkington Travelling Scholarships
Pilkington Glass Limited annually awards a scholarship to the value of $4,000.

Two candidates from the graduating year may be nominated from the Faculties and Schools of Architecture in Canada. The winner will be selected on the basis of evidence and work submitted in the form and manner described in the official brochure which will be circulated during the academic year.

Anaconda American Brass Limited Scholarship
The Anaconda American Brass Limited offers a scholarship of $300, to the student in the Fifth Year who obtains the highest aggregate honour standing in the subjects of the Fifth Year.

The George T. Goulstone Fellowship in Architecture
The late George T. Goulstone of New York City bequeathed to the University the sum of $10,000, to be known as the Goulstone Foundation, the income therefrom to be paid to such worthy student or students who are graduates of the University of Toronto as may be designated from time to time, with the wish that those enjoying such awards devote themselves in the main to the study of Georgian Architecture in England. Applicants should submit to The Faculty Secretary a letter outlining a specific topic of study and an itinerary by March 15.

Toronto Architectural Guild Medal
The Trustee Board of the Ontario Association of Architects awards this medal annually to a member of the graduating class showing outstanding ability in design.

Royal Architectural Institute of Canada College of Fellows Scholarship
The College of Fellows of the Royal Architectural Institute of Canada offers two scholarships to the value of $2,000 to graduates of Canadian faculties and/or schools of Architecture. The scholarships are given for the advancement of architectural knowledge through travel, study or research and they are awarded every second year. Graduates of five years prior to the year of award are eligible. They will next be offered in 1972.

Royal Architectural Institute of Canada Medal
The Royal Architectural Institute of Canada presents a medal to be awarded to a member of the graduating class in the Department of Architecture who, having completed the requirements for the degree in this university, has obtained high standing throughout his course, particularly in Design, and gives promise of being an architect of distinction after graduation.

The Jules F. Wegman Fellowship
Through the generosity of the late Mrs. Minnie Wegman, an annual scholarship for post-graduate study has been established. The applicant must be enrolled in the graduating year of the degree course in the Department of Architecture and undertake to pursue post-graduate study or research to be made through travel or at an approved graduate school of architecture for a period of at least seven months. The value of the fellowship, not to exceed $2,000, will be awarded as the Council recommends and as the income on the capital permits. Applicants should submit a letter to the Faculty Secretary by March 15 outlining a specific topic of study and an itinerary.

Central Mortgage and Housing Corporation Fellowships
The C.M.H.C. offers annually Fellowships valued at $3,000 each, to Canadian citizens and landed immigrants who are candidates for a master's degree in a wide range of subjects related to environmental studies – including architecture, planning and landscape architecture. Information should be sought from C.M.H.C. Ottawa and/or from the Dean of the Faculty, or Chairman of the Department concerned. The final date for application is March 1. Senior research fellowships at post-master's level are also offered.

Toronto Chapter O.A.A. Book Prizes
Ten prizes to the value of $300 awarded annually by the Toronto Chapter of the Ontario Association of Architects to two students in each year of the five year course having the highest and second highest academic average based on the final marks for that session. First prizes of $40 in books and second prizes of $20 in books.

AWARDS FOR STUDENTS IN LANDSCAPE ARCHITECTURE

Second Year
The Frances Blue Scholarships
Donated by Mrs. Frances Blue, Aurora, Ontario, two scholarships each of the value of $250 are awarded to students entering the Third Year of the course in Landscape Architecture (for academic performance in the first two years). Although scholastic merit is the main basis for award, financial need may (other conditions being equal) be taken into consideration. No application is necessary and the award is to be given annually until the original endowment of $2,000 is exhausted.

RESEARCH PROJECTS

Environmental Problems in the North
A group research project concerned with the environmental aspects of community development in Canada's northland augmented by a computer generated methodology. This is sponsored by the Department of Indian Affairs and Northern Development, directed by Dean Howarth and Professor Morton Katz. Also an associated project on spherical habitations in hostile environments – arctic, undersea, etc. – research student, Vladimir Matus.

Historical Research
An inventory and research of buildings of architectural interest in Ontario is being prepared by Professor William Goulding with the support of a grant from the Province of Ontario, Department of Tourism and Information.

DEPARTMENT OF
ARCHITECTURE

DEPARTMENT OF ARCHITECTURE UNDERGRADUATE PROGRAM

Introduction

The Department of Architecture anticipates that its members are challenged by the needs of their fellow citizens to be decently accommodated in cities, factories, offices, schools, pleasure places and homes.

The Department believes that the present conditions in our cities and on our land are increasingly unsatisfactory. It is from this critical position that a five-year program (leading to the degree of Bachelor of Architecture) has been reformulated.

The basis of the five-year program is the concept that man's way of life (his 'story') is the proper generator of any 'built' world. It is by the examination and the acceptance of human values that responsibility is assumed for the 'built' world. Such concern for human values has to be supported by determination and imagination if the problems of our cities and our land are to be diagnosed and resolved.

The Department encourages its students to undertake investigations of relevant problems throughout the program. Resources (specialists and library facilities) are available to provide students with information, at all stages of the problem development.

Issues introduced as challenging concepts, worthy of experiment, produce a stimulating ambience for the exploratory work undertaken in the Department.

Further information and advice (particularly with regard to entry procedures) may be obtained from the Department. Appointments can be made through the Department Secretary (telephone: 416–928-3089).

Professional Recognition

The degree of Bachelor of Architecture is recognized by the Registration Board of the Ontario Association of Architects as *partial* qualification for practice in Ontario. Further information concerning the period of professional training after graduation and other special conditions governing professional registration can be obtained from the Secretary, Ontario Association of Architects, 50 Park Road, Toronto, Ontario.

The Registration Boards of other provinces also accept the degree of Bachelor of Architecture, although in some cases the necessary period of office practice will vary from that required in Ontario. The Degree is one of a number in the Commonwealth recognized by the Royal Institute of British Architects which accepts the degree as exempting from all its Final Examinations, except Professional Practice. The conditions governing admission to Associate membership of the R.I.B.A. may be obtained from the Secretary, 66 Portland Place, London W.1. The degree is also accepted as fulfilling the academic requirements for registration by certain State Registration Boards of the United States of America.

Curriculum: Educational Aims

Before describing the organization and content of the courses, some explanation of the educational precepts behind the curriculum may be necessary.

The curriculum is based on the concept of the 'probe' or 'open-ended' investigation. In all creative work, when the outcome is truly unknown, the sensations of risk and discovery generate an energy, enthusiasm and motivation unprecedented in conventional educational situations.

When the basis of the investigation is a relevant and credible problem, all our facilities and resources, our differing experiences, can be brought together, helping to produce unique determinations and resolutions of our common problems. Given the precedent of the traditional design course, we are attempting to apply the 'open-ended' concept to many of the conventional academic courses and to bring them within the workshop experiment of the studio. We are giving more responsibility to students to acquire information and advice when it is relevant to the problems that confront them. This process will require a considerable effort by both staff and students. It will require certain 'openness' in order that we can achieve proper and critical standards, *not* through competition, but by interest and concern for each other's feelings, reactions and prejudices.

We should, through this process, be able to recognize when we are beyond or outside our own experience and recognize our need for advice, information or help. We imply that we have to improve the quality of the enquiry (the input) before we can expect an improved resolution of any given problem. We have to become literate. We also can imply that we are

as much concerned with the *manner* of resolution, as with the resolution itself. This concern is our only hope to be able to cope with the as yet unknown problems that must confront us in the near future.

The curriculum is based on a five-year program. We recognize that time limits are an arbitrary and, often, crude determination of a continuous process which must be organized within academic discipline. It is important to understand that the requirements of this new organizational pattern put great emphasis on the precision of the timetable (both in its making and in its keeping).

There are three distinct elements in the formation of the curriculum. They are:
the introductory problems
the core problems
the elective courses

Introductory Problems

The introductory problems are confined, at this stage to term I of the first year. Their purpose is to suggest to each student something of his own potential as well as something of the potential of his chosen field. They should define, albeit crudely, 'architecture' as it must occur to us today. Their proposition that man is at their centre, must be supported by the exposition of necessary skills that form the technique of building.

The introductory problems are largely ones of investigation and observation, rather than resolution.

Core Problems

The core problems carry a greater responsibility; not only must they sustain the initial enthusiasm of the introductory problems, but they have to be the framework for all the processes of a student's progress through the school. Each core problem will be the basis of one year's work (except in the first year).

There will be a comprehensible development between successive core problems so that students may understand the total development at the beginning of the five-year course.

Each core problem will be staged through the academic year to focus on sub-problems assimilating, wherever possible, the traditional service courses within the core problems. Traditional courses can therefore be developed as 'open-

ended' issues and will depend on each student's unique contribution in the manner of a critical forum.

Elective Courses

The elective courses are considered as complementary to the mandatory core problems. While the implication of the core problem is one of pragmatic relevance, the implication of the elective courses can be reversed so that we recognize particular and scholarly choices of each student.

Each student (except in the first year) will be required to take at least two one-year courses (or their equivalent) each year *subject to the approval of the Instructor giving the course and the Year Co-ordinator.* (First year students will be required to take at least two half-year courses in term II). A one-year course is deemed to be any course of a minimum of 2 lecture hours per week or the equivalent.

During the four years (second through fifth) each student is required to take at least one of the history courses as one of the elective options.

Students taking elective courses outside the Department will have to meet and satisfy the requirements of that Department to gain credit recognition. Students are advised to consult the list of courses in the Department Handbook recommended by other Departments being particularly relevant to their needs.

Students are expected to take a responsible attitude to the selection of courses and to bear in mind that they have a five-year period to arrange to their best advantage. It is for this reason that Year Co-ordinators must be consulted before registering for any course. Any changes must be notified in writing to the Faculty Secretary.

FIRST YEAR SUBJECTS

Introductory Problems – Year 1/Term I
Problem A *Institutions*
Problem B *Photo Essay*
Problem C *Historical Case Studies*
Problem D *Structure*
Problem E *Junctions*

Core Problem I – Year 1/Term II
Summer Place – Stage I through Stage VI

ARC/1.01/I & II – Criticism
ARC/1.02/I & II – Mathematics (Math 100)
Electives: 2 half-year courses in Term II

SECOND YEAR SUBJECTS
Core Problem II – Year 2 – Terms I & II
Oasis – Stage I to Stage VIII
*Electives: at least 2 one-year courses

THIRD YEAR SUBJECTS
Core Problem III – Year 3 – Terms I & II
Resort – Stage I to Stage VIII
*Electives: at least 2 one-year courses

FOURTH YEAR SUBJECTS
Core Problem IV – Year 4 – Terms I & II
Education and the Community – Stage I to Stage VIII
*Electives: at least 2 one-year courses

FIFTH YEAR SUBJECTS
Core Problem V – Year 5 – Terms I & II
Renewal Potentials of Degenerating Areas
ARC/5.03/II – Professional and Legal Responsibilities
*Electives: at least 2 one-year courses
*During the four years (second through fifth) each student is required to take at least one of the history courses as one of the elective options.
A one-year course is deemed to be any course of a minimum of 2 lecture hours per week or the equivalent throughout both terms.

Introductory Problems – Year 1/Term I
Problem A *Institutions*
Group case study to discover and report on all movement systems within a single building complex. The systems explored should represent people-movement as well as conventional mechanical systems (water, heating, ventilation, etc.). Evaluation of human responses. Methods of presentation are an important issue.

Problem B *Photo Essay*
By reportage photography, each student is to make a visual essay on an aspect of Toronto as an accommodation for

human action. In particular the photographs should demonstrate 'support' (that part of the 'built world' proposed by an architect or builder), 'fill' (that physical apparatus brought independently to the support) and the resultant 'action' that the two may generate.

Problem C *Historical Case Studies*
Group case studies on cause and effect relationships between key historical buildings and their contexts. Problem should demonstrate the buildings in their times by contemporary sources. Introduction to criticism and assessment of quality (architectural worth). This project should serve not only as a study of a set of particular buildings, but should also introduce the over-all historical context in which any building is set.

Problem D *Structure*
Experimental studies to illustrate principles of behaviour of building materials under stress conditions. The experiments should indicate means of resolving critical stress conditions within the devised system. Invention of working demonstration models is important.

Problem E *Junctions*
This problem is complementary to problem D. Group experiments exploring properties of materials through the problems of 'jointing.' The 'performance requirements' of joints to be specified and investigated (i.e. waterproof, openable, etc.).

Results should include a survey of precedents as well as a workshop model.

Core Problem I: Year 1/Term II
Summer Place
The first problem of a series based on 'community.' This problem has been chosen to precipitate the most fundamental concerns that may face an architect today. It requires the investigation of accommodation for children for a limited period and so draws on experience that can easily be described and discussed.

Stage I manifesto: individual statements of attitudes, both philosophical and practical.
Stage II introduction to theory and practice of surveying.
Stage III development of scheme outline.

Stage IV workshop I: structure. An investigation of linear and 2-dimensional tension elements. Introduction to structural theory based on the detailed design of roofs.
Stage V workshop II: movement. Detailed development of kitchen and bathing areas. Introduction to theory and practice of water supply and drainage in addition to detailed planning requirements.
Stage VI resolution of core problem: Stage III reconsidered in the light of the detailed investigations of stages IV and V. Development of communication techniques through models, drawings and photography.

Core Problem II: Year 2/Terms I + II
Oasis
This problem has been designed to be a clear extension of core problem I: summer place. It retains the concept of a contained community, but introduces complexities of organization and building technique. Further, the problem is to be undertaken as an investigation of a design process. Its staging has been arranged so that it can provide a number of different problems which relate to each other and ultimately provide an opportunity of feed-back into their first point of departure.

The problem is to develop proposals for a prototype (or 'pilot') 'station' on transcontinental highways to accommodate automobile travellers. The problem draws on common experience and evaluates constant and archaic common places in the light of our contemporary possibilities and potentials.

Stage I Vacation assignment: investigation and evaluation of existing facilities.
Seminars: History of overnight travel; the influence and implications of automobiles; transient communities.
Stage II Manifesto: an amplification of criteria by which an architectural program may be proposed. This work is seen as a direct extension of the core problem I: Stage II Manifesto.
State III Site selection and predicted development.
Stage IV Explorative studies of possible 3-dimensional organization of the site.
Stage V Workshop I: structure. Introduction to building techniques and systems. Implication of industrialized building Detailed application to one aspect of the oasis facilities.
Stage VI Workshop II: fabric and movement.
Introduction to building components and their assembly within

a comprehensive arrangement. Implications of lighting and acoustical standards.
Detailed application to the sleeping/bathing accommodation.
Stage VII Workshop III: objects-in-landscape.
Detailed investigation of problems of landscape design and the accommodation of built-forms.
Introduction to signs and communications within a recognizable region.
Stage VIII Resolution of core problem.

Core Problem III: Year 3/Terms I + II
Resort
This problem is proposed as the last in the sequence concerned with 'isolated' communities. It builds on the two previous core problems by introducing greater complexities of organization and more sophisticated issues of diversity and choice. It requires understanding of large-scale organization in the initial investigation and also in the field as a construction operation. Thus the emphasis at most stages of this problem will be with large-scale conceptions of constructional and mechanical servicing systems.

The problem is to develop proposals for a year-round 'pleasure place,' taking advantage of natural and man-made facilities which may be utilized in an imaginative manner, by vacationers, tourists and residents. The problem draws on our experience of existing entertainments, fashions and past phenomena and goes forward to indicate the potential of the immediate future.

Stage I Vacation assignment: investigation and evaluation of existing resorts.
Seminars: History of spas, resorts and towns having a single economic base; history of leisure; history of spectacle; influence of fashion; use of special mechanical equipment.
Stage II Manifesto: an amplification of criteria by which a building program may be proposed. This work is seen as a direct extension of previous core problem manifestoes.
Stage III Site selection and predicted development.
Stage IV Explorative studies of 3-dimensional organization of the site. Introduction to planning concepts.
Stage V Workshop I: infra-structure. Detailed design investigations based on Stage IV proposals. Explorations of site

services, primary mechanical distributing systems and skeletal structural proposals.
Stage VI Workshop II: living unit. Detailed design investigations of one unit of living unit within the framework described in stage V.
Stage VII Workshop III: night design. Detailed development of proposals for 'night architecture.'
Stage VIII Resolution of core problem.

Core Problem IV: Year 4/Terms I + II
Education and the Community
This problem is in principle still connected to all the earlier core problems. It does, however, imply much greater complexity than any of the previous problems by being based on an existing community. For this problem a study of the interaction between 'tertiary level' educational facilities and an urban community is proposed.

This problem aims to extend the 'infra-structure' concept of Core Problem III by concentrating on the detailed requirements of highly specialized facilities which can be anticipated in this context.

Stage I Vacation assignment: investigation and evaluation of typical facilities in relevant and comparable situations.
Seminars: History of places of learning; history of revolution and communication; investigation of Town/Gown relationships; history of Academic government and ritual; investigation of Student/Teacher relationships; traditional concepts of student life; local concepts of education; the place of technology in education.
Stage II Manifesto: an amplification of criteria by which a building program may be proposed. This work is seen as a direct extension of previous core problem manifestoes.
Stage III Site selection and predicted development.
Stage IV Explorative studies of 3-dimensional organization of the site. (Most probably the preceding stages will be undertaken by groups.)
Stage V Explorative studies of individual facilities within the framework of stage IV.
Stage VI Workshop I: specification of performance criteria. Detailed development of technical studies of structure, mechanical services and construction based on proposals

made in stage V. Particular emphasis will be given to methods of construction and the co-ordination of building components.
Stage VII Workshop II: acoustic precision. Development of a special facility requiring precise acoustical performance.
Stage VIII Resolution of core problem.

Core Problem V: Year 5/Terms I + II
Renewal Potentials of Degenerating Areas
This problem anticipates several multi-discipline case-studies of existing urban areas. From such case-studies, it may be possible to propose *regenerative strategies* which determine not only immediate action but indicate the potential effects of such immediate action as long range forecasts.

It is assumed that the problems will be organized by students and that they will be responsible for the arrangements of developmental and other resources they consider relevant to their studies.

In general, it is recommended that the procedure outlined for core problems be followed. In particular, each student will be required to submit a *statement of intent* defining the scope and scale of each case-study (either by individuals or by groups) at the outset of the problem.

The statement of intent should also indicate the required resources (particularly staff) that can be reasonably predicted.

The statement of intent must include a *staff member (or other qualified person) who has consented to act as Tutor* for the whole problem.

Professional Practice
In term II there will be a seminar series on 'Professional and Legal Responsibilities': a re-assessment of present and implied responsibilities between architects, related professions, employers, contractors and society. (See Mandatory Courses)

Mandatory Courses: other than core problems

ARC/ 1.01/I+II **Criticism** J. Medjuck
From an introduction to the principles of criticism, the course aims to evolve an evaluation of quality, whether in writing, drama, movies, or architecture. The discussions will parallel the developments in the introductory problems.

In the second term a parallel theme to core problem I 'Man and his attitudes to the given World' will be developed through reading assignments and discussions. It is hoped that, by ranging over the whole field of literature, by devaluing time, the past can be made to give up potent and relevant images which will enrich the work of the core problems.

ARC/1.02/I+II (Maths 100) **Introduction to Mathematics** The nature and role of mathematics, illustrated primarily by the development of numerical and geometric ideas. Lectures, films, study of mathematical literature, and the writing of an essay. Tutorials will provide opportunity for doing mathematics as well as talking about it.

ARC/5.03/I **Professional and Legal Responsibilities** Dr. T. Howarth
A seminar course on the present responsibilities between architects, employers, contractors and society together with discussions of future trends.

Numbering
The letters indicate the department; the first figure of the three figure set indicates restrictions on enrolment by years ('1' indicates no restrictions whereas '2' indicates the course is available to second year and above); the second and third figures indicate individual course number; 'Roman' numerals indicate the terms in which the course is offered; (I + II indicates a full year course); prerequisites are given in parenthesis.

For example ARC/1.11/II (intro. prob. C) is given by the Department of Architecture; open to all years; course no. 11; The central frame of architecture; given in term II introductory problem C: Historical Case Studies is a prerequisite course. Electives: Department of Architecture

ARC/1.11/II (intro. prob. C) **The Cultural Frame of Architecture** Prof. G. Baird
Introduction to the idea of architecture both as a reflection of a given social order and as a generator of that order.

ARC/2.12/I (ARC/1.11/II) **The Phenomenology of Architecture** Prof. G. Baird
A more precise and theoretical elaboration of ARC/1.11/II, employing the principles of phenomenological philosophy, perception psychology and modern communication theory.

ARC/1.13/II **Theory of Architecture** Prof. K. Barker
An introduction to general principles of design. Consideration of geographical, economic, technical and social factors which influence architectural form.
Aesthetic and functional problems involved in the design of a building. Development of methodical design technique.

ARC/2.14/II **Critical Appraisal of Systems & Methodology**
Prof. R. Whiteley
Critical appraisal in general and a critical look at scientific method, discovery and invention, decision theory, systems, man-machine interface, etc. and an exploration of the capabilities of such tools in the field of design and architecture. Development of a critical attitude in design.

ARC/2.15/I+II **Aesthetics** not given 70/71
A historical and critical survey of the principle theories of aesthetics.

***ARC/2.20/I+II** **The Canadian Scene 1670-1970** Prof. W. Goulding
Analysis of the buildings and spaces and the ideas and forces that shaped them.
A study of the farms, villages and forts of early Quebec and the Maritimes, the impact of early industry and how the development of industry, steam power and the railroad affected 19th century development.
The development of Victorian taste in architecture, how new sources of energy and technical inventions helped to create the modern urban explosion.
The character of the Canadian city and countryside today.

***ARC/2.21/I+II** **Pattern & Style in 19th Century Ontario** Prof. W. Goulding
Using as case studies two towns (to which field trips will be organized) which were largely built in the 19th century to examine the roles of public and private responsibility in their development, their physical organization, scale and appearance. Selected typical buildings will be examined in detail.

***ARC/2.22/I+II** **Architectural Forms of the Antique World and Their Impact on the 19th Century** Prof. W. Goulding
An examination of some of the most famous building groups

*Counts as mandatory course for graduation.

of ancient Egypt, classical Greece and Rome with emphasis on their repeated impact on the taste and style of later ages of Western culture, particularly on the so-called 'Revival Period.' At least one tour will be made of 'Revival Period' buildings in Metro Toronto.

*ARC/ 2.23/I+II **The European Tradition of Framed Building** Prof. J. H. Acland
A study of the generative principles of design in the primitive and historical evolution of Northern European Architecture. Primitive frame, Gothic, National Renaissance, Structural Electicism and Iron and Steel Frame.

*ARC/ 2.24/I+II **The Mediterranean Tradition of Mass and Shell Building** Prof. J. H. Acland
A study of the fundamental principles of design operative in the evolution of architecture in the Mediterranean and the Middle East.
Primitive mass and shell, Byzantine and Islamic domes. Romanesque vaults, Baroque domes and ferroconcrete shells today.

*ARC/ 2.25/I+II **Design in the 19th and 20th Centuries** Dr. T. Howarth
This course is virtually a survey of cultural development in Western Europe and North America during the 19th and 20th centuries. The changing character of the physical environment (the growth of urbanisation for example) is seen in its social and economic context, and the universality of design principles in terms of time and place is discussed. The effects upon society, and consequently on the built environment, of industrialization, population growth, inventions, etc., are studied together with progressive movements in the arts and crafts.

ARC/1.30/II **Theory of Movement** Prof. G. Robb
An investigation of the movement and transportation of people.

ARC/1.31/II **Theory of Sensory Perception** Mr. E. Wotton
An introduction to sensory and physiological perception of natural and man-made conditions. Development of climate modification through the evaluation of human requirements.

*Counts as mandatory course for graduation.

ARC/5.32/I **Theory of Acoustics** Instructor to be announced
Development of acoustical control through planning. Detailed analysis of specialized acoustic standards and investigations of theoretical concepts of acoustic prediction.

ARC/2.33/I **Theory of Lighting** Mr. E. Wotton
(ARC/ 1.31/II) Evaluation of standards of daylighting and artificial lighting in relation to definable activities. Methods of computation to achieve precise performance.

ARC/3.40/I **Structural Engineering I** Instructor to be announced
A thorough study of the forces in and the deformation characteristics of various skeletal structures. Design of skeletal structures in steel, concrete, and timber by graphical and mathematical methods.

ARC/4.41/I **Structural Engineering II** not given 70/71
(ARC/ 3.40/I) Mathematical analysis of indeterminate structures (continuous beams, frames, etc.) and design of indeterminate structures in steel, concrete and timber.

ARC/5.42/I **Structural Engineering III** not given 70/71
(ARC/ 4.41/I) A more detailed study (using approximate methods) of the behaviour of more frequently encountered shells, folded plates, grids and plates. Design of surface structures.

ARC/1.50/I **Construction Materials and Methods I**
Prof. D. H. Lee and Prof. S. R. Kent
A study of the properties of building materials in relation to structural component performance requirements, and an introduction to the building process.

ARC/1.51/II **Construction Materials and Methods II**
(ARC/ 1.50/I) Prof. D. H. Lee and Prof. S. R. Kent
A study of the properties of building materials used as internal and external finishing components and surfacings.

ARC/3.52/II **Systems of Construction** Prof. W. McBain not given 70/71
Development of industrialized building systems. This course will be prefaced by a historical survey in order to establish criteria of assessment for any system. It will consider appropriate materials, forms and scales of operation.

ARC/2.53/I Construction Materials and Methods III Prof. S. R. Kent
A study of the conditions for human comfort and the use of membranes and service components as modifiers of the environment.

ARC/2.54/II (ARC/2.53/I) Construction Materials and Methods IV Prof. S. R. Kent
The effect of heat flow, moisture flow, sound flow, and fire on comfort, building materials and the structure.

ARC/3.60/I Plant Material and Landform Prof. F. Watts
Introduction to plant ecology (with emphasis on the architectural qualities of plant forms) and to natural land formations with an evaluation of man-made changes.

ARC/1.61/II History of Gardens Prof. F. Watts
An evaluation of the conditions and desires that establish garden-building throughout the world, together with a critical assessment of the resulting forms.

ARC/4.70/I Town and Regional Planning Prof. A. Waterhouse
Problems of world urbanization; the year 2000; nature of the megalopolis, its guidance and control; urban functions and transportation; analysis and research techniques; urban renewal.

ARC/4.71/I Planning law Mr. J. Lorimer
Introduction to the existing legal processes of planning and an evaluation of their potential as a problem-solving tool based on specific criteria of human standards.

ARC/4.74/II Life Styles and Architecture Mr. J. Lorimer
How people live – family, social, economic and political life – examined through the formal reports of social scientists and the informal reports of journalists, novelists and film-makers. Two or three specific groups will be selected for detailed study. The implications of different life styles for architecture and architects will be examined.

ARC/5.72/I Problems of Growth and Change in the City
Prof. K. Stevens and Prof. P. Carter
A seminar based on case study explorations of typical cities.

ARC/5.73/II Principles of Economics in Architecture and Planning
Prof. K. Stevens
A seminar based on methods of implementation to achieve predicted patterns of growth.

ARC/1.80/II Introduction to Drawing Prof. J. A. Hall
Architectural sketching and life drawing through a variety of drawing media.

ARC/2.81/I+II Study of Colour As An Element of Architectural Design
Prof. J. A. Hall and visitors
Letter forms and lettering in relation to architecture; and an investigation of techniques of visual communication.

ARC/2.82/I+II Individual Studio Projects in Drawing, Painting, Sculpture
Prof. J. A. Hall
Facilities for working from models together with field trips.

ARC/2.83/I Dorset Summer Workshop Prof. J. A. Hall
For two weeks immediately preceding registration, the Forestry school facilities are available for intensive work with guidance on drawing, painting and photography.

ARC/4.84/I Construction Management I Prof. D. H. Lee not given 70/71
A study of construction contracts, documents and specifications.

ARC/2.85/I Computer Course I Mr. L. Green
The course objective is to enable students with no prior technical knowledge of computing to consider how computing technology can be exploited to advantage in achieving an architect's goal. Participants will have an opportunity to program computers and thereby solve problems relevant to architecture. Practicing architects who exploit computing technology will give guest lectures concerning their present work.

ARC/2.88/II Computer Course II Mr. L. Green
The objective of this course is to discover which architectural values and concepts can be quantified and to develop relationships between these values so that computers can

be used to evaluate numerous design and management alternatives.
It is assumed that students have completed ARC/2.85/I and/or that they are able to program one of the University computers.

ARC/4.86/II (ARC/4.84/I) **Construction Management II** Prof. D. H. Lee not given 70/71
A study of construction organization, administration and technical communication.

ARC/1.87/I+II **Audio-Visual Techniques** Instructor to be announced
A study of the use of photography, film, and video-tape as techniques of communication. (Due to limitation of equipment and darkroom facilities this course will have a limited enrolment).

Other Departments
In addition to the elective courses described in this Calendar, students are encouraged to take advantage of the variety of courses offered by other departments, not only with our Faculty but also by other departments within the University. Students should, therefore, familiarize themselves with the Calendar of the Faculty of Arts and Science as well as with our own.

It must be understood, however, that students may only be enrolled in an elective course with the consent of their Year Co-ordinator and the Instructor giving the course and the consent of the faculty or division concerned. Attention should be given, not only to level of each course, but also to the prerequisite courses.

Practical Experience
Although practical experience is no longer a requirement for the degree of Bachelor of Architecture, the Department wishes to emphasize the value of practical experience. Students are encouraged to take advantage of the summer vacations for a variety of useful and complementary experiences. In particular, office work in both architectural and engineering firms, site work and travel make an essential contribution to each student's development.

Students should consider the possibility of extended periods of practical experience in the later years of the five year course.

Periods of one year may provide, in certain circumstances, better job experience than a series of shorter engagements. Students planning to take leave of absence for this purpose should consult their Year Co-ordinator before referring the issue to the Department Office.

DEGREE OF MASTER OF ARCHITECTURE

For the degree of Master of Architecture full-time attendance is mandatory for at least one academic year.

Depending upon the candidate's special interests and aptitude, the graduate programme may take one of two forms:

A / An individual research project in which the candidate investigates in depth a subject of his own choosing under the guidance of a tutor, and produces an illustrated, written dissertation
or
B / A studio design course where major issues concerning the architectural aspects of urban design are explored. In this case the means of presentation will be by drawings, diagrams and models, with a fully-documented report.

Under A above. Advanced research may be undertaken in one of several fields, for example:
history, theory and criticism
architectural science and technology
the functional requirements of a building type (schools, hospitals, civic buildings, etc.)
architecture and the human environment in extreme climates – studies of architecture and the planning of communities in the far north and the tropics

Recent research in Architecture has ranged over subjects as widely divergent as the design of university residences, precast concrete, housing in the Canadian North, the life and work of F. L. Sullivan, archaeological studies in Central America, and industrialized building systems.

Each candidate is allocated a tutor who advises on matters relating to his research and academic studies, and the resources of other departments of the University are available to him.

Under B above. Studio work both on a collaborative and individual basis forms the major part of the candidate's programme and is used to synthesize supporting lecture and seminar courses. Visiting critics and guest speakers are introduced to the design juries and seminar sessions. Instead of a written dissertation each candidate is required to produce a report and conclusions supported by the drawings and models prepared in the studio.

The objective of the programme is to place architecture in the wider context of regional and urban planning and to give the candidate an opportunity of appraising the complex forces that shape the human environment. The first phase of the work examines these forces which are then used as tools for the implementation and formulation of design policies and decisions for some real situation as, for example, in Metropolitan Toronto (studied in 1964-65) in London, Ontario (1965-66).

An urban sketch plan is produced indicating how the area might be developed over a period of two or three decades, and becomes the framework for more detailed studies. In this latter phase of the studio programme major elements of the scheme are designed, such as a transportation exchange, an intense activity node, or housing.

Among the ancillary courses specified by the Master's Committee are an urban case study seminar, and a seminar on transportation.

Regulations

Candidates for the degree of Master of Architecture are accepted under the General Regulations of the School of Graduate Studies.

1*a* A candidate for the degree of Master of Architecture shall hold the degree of Bachelor of Architecture or the degree of Bachelor of Applied Science in Architecture of this University or a degree from some other university recognized as equivalent by the Council of the School of Graduate Studies.

1*b* Graduate students are required to perform at least one full session's work, or its equivalent, before being recommended for the degree of M.Arch.

1*c* A candidate for the degree of M.Arch must have a good academic record in his undergraduate course and must have an average mark on written examinations of at least 66% in his final undergraduate year, save in exceptional circumstances.

1*d* Candidates for the degree of M.Arch. are required to pass written or oral examinations in not fewer than two and not more than five subjects, in addition to preparation of a thesis, in fulfilment of the requirements for the degree. At least half of the subjects chosen should have relevance to the thesis topic.*

2 A candidate wishing to proceed to a graduate degree shall register with the Secretary of the School of Graduate Studies at the beginning of the academic year and must submit evidence that the department concerned is willing to enrol him.

3 Not later than October 31, he shall submit to the Secretary for acceptance by the Council of the School of Graduate Studies the title of his proposed thesis as approved by the department concerned.

4 Not later than May 15, he shall present evidence to the Council of the School of Graduate Studies that he has spent not less than one academic year in the department concerned.

5 Evidence that the candidate has satisfactorily met all the requirements of the Department of Architecture with regard to thesis and to such examinations as the Department shall require, shall be forwarded to the Council of the School of Graduate Studies through the sub-committee administering the regulations governing the degree of Master of Architecture, not later than May 6.

Special Instructions to Candidates

All enquiries for graduate work should be addressed to the Department Secretary *indicating clearly whether the research programme or the studio course is preferred.* An interview will be arranged if possible.

The following information should be provided:

curriculum vitae;
official transcript of marks obtained in undergraduate courses;
three letters of recommendation one of which must be from the head of the school in which the undergraduate degree was obtained;
examples of design work, publications, etc.;
if the research programme is preferred the proposed area of study, or thesis topic must be stated together with a short outline of intentions (about 500 words)

*In certain cases a candidate may read the subjects of the Diploma Course in Urban and Regional Planning in lieu of the subjects normally required; the thesis, however, remains the major assignment.

Candidates whose native language is other than English must have complied with General Admission Requirements. Candidates should ensure that they have financial resources necessary to complete the academic requirements of the course before seeking admission.

Scholarships and Awards
Enquiries for scholarships and awards should be made to the Secretary of the School of Graduate Studies and not the Department, except in the case of awards listed below: Central Mortgage and Housing Corporation Fellowships, Canadian Council on Urban and Regional Research Fellowships.

Graduate Assistantships
Several graduate assistantships of up to $2,500 are offered to suitably qualified Master's degree candidates. The appointments carry some teaching responsibilities and application should be made to the Dean of the Faculty of Architecture, Urban and Regional Planning and Landscape Architecture before June 1.

DEPARTMENT OF
URBAN AND
REGIONAL PLANNING

DEPARTMENT OF URBAN AND REGIONAL PLANNING

The profession of urban and regional planner is effectively fifty years old in Canada, the Town Planning Institute of Canada having been founded in 1917. Development has been rapid in the past fifteen years and today all Canadian cities and most towns have recognized the need for planning by setting up departments to prepare and administer plans. Senior levels of government also acknowledge the need for planning. Most provinces have planning departments. Metropolitan areas have undertaken planning, and there is mounting interest in regional planning and development.

Career opportunities range widely, from the work of the planning director much concerned with the relationship between government and the planning operation, to the role of the highly specialized researcher. The latter is of rising importance as interest shown by various supporting disciplines, such as economics, sociology and political science, increases, and data about the city becomes increasingly capable of being handled by computer. There are also many firms of consultants who undertake various kinds of planning for municipalities and private developers.

The qualities necessary for the planner are many. Above all, it is vital that he has a strong interest in, and curiosity about, the working of the city. He must be willing to involve himself in the on-going process of guiding the development of the city and the region. He must be concerned wtih the city and region seen as political, social, economic and physical entities and he must be able to see things from many perspectives and from many points of view. He must therefore, be prepared to study the city very seriously and must be able to organize this knowledge so that it may be useful.

In addition, he has to have a will to action which will enable him to propose solutions to the problems of the city as they manifest themselves in his field of interest. He must develop powers of initiative and cooperation in working with others through the political system. This requires the planner to develop a high degree of maturity of judgment and a breadth of outlook required by few other professions.

Planning is closely related to many other disciplines. There are the knowledge disciplines of economics, sociology, political science, social psychology; the action disciplines of

engineering, architecture, landscape architecture and law; and those disciplines which deal systematically with values. Students may therefore enter a planning programme from a very wide variety of disciplines and each makes a special contribution to the multi-disciplinary operation of planning education.

In addition to professional openings, there is also an increasing number of opportunities in academic research work and this aspect of planning will probably become more important in the future. The Department of Urban and Regional Planning works closely with the University's Centre for Urban and Community Studies, placing considerable emphasis on the need for the student to learn to carry out independent research.

For those students who have no experience of graphic work or the use of the computer, special pre-term courses are arranged and attendance is required. All students must become proficient in both these fields.

The student is encouraged to find his own special interests in planning and to develop them. This should not be difficult if the student is properly motivated toward promotion of the public interest – an essential prerequisite for admission to a programme in urban and regional planning.

The M.Sc.(Pl.) programme is designed to equip the student entering professional life and to provide a foundation for those who may wish to continue with further education.

DEGREE OF MASTER OF SCIENCE IN URBAN AND REGIONAL PLANNING

The M.Sc.(Pl.) course is intended to give a good standard of education in both urban and regional planning as a base for professional activity in those fields, and for subsequent academic specialization in one of them.

Candidates for the M.Sc.(Pl.) programme will be required to complete a programme consisting of required and elective subjects as the Graduate Department may indicate.

The thesis shall be upon a topic within the field of the current theory and practice of planning. Topics largely belonging to the supporting subjects and having only minor concern with planning would not be suitable. The thesis should be a contribution to knowledge but its main purpose is the educa-

tion of the student. Students will in general be expected to offer theses which go beyond the purely descriptive.

The thesis alternative consists of two additional half year courses plus a research topic together with a research report.

Normally a candidate will be required to attend the University for a minimum of two full academic years in order to cover the programme. The distribution of the courses over the two years is flexible except that Theory II, Project Work II and Thesis may be taken only in the second year unless special circumstances require otherwise.

Classes usually begin during the third week of September and continue, with a short break at Christmas, until the end of March. Students from overseas are advised to come to Toronto a week before the commencement of classes in order to familiarize themselves with procedures.

Candidates whose native language is other than English are required to give proof of proficiency in English language. The Princeton or Michigan test results should be submitted for this purpose.

The application form for the M.Sc.(Pl.) degree is the normal application form for admission to the School of Graduate Studies. Transcripts of marks should be submitted in duplicate. Applicants should submit with their curriculum vitae at least one letter of recommendation indicating their academic ability.

Application, in the first instance, should be made by letter to the Chairman of the Department of Urban and Regional Planning.

The M.Sc.(Pl.) degree, together with the required professional experience gives admission to Membership in the Town Planning Institute of Canada.

Awards

The Central Mortgage and Housing Corporation offers annually to degree students in planning fellowships of $3,000. Information may be obtained from the Chairman of the Department. Applications to be submitted not later than March 1 through the Department. The Canadian Transport Commission also offers fellowships of $3,600. The same procedures are to be followed.

Regulations

1 Candidates for the degree of Master of Science in Urban

and Regional Planning are accepted under the General Regulations of the School of Graduate Studies.

2*a* A candidate shall hold the bachelor's degree of this University in architecture, civil engineering; or in arts or science having taken an Honour Course in economics, geography, geology, law, political science, sociology, social anthropology or other discipline which the Council of the School of Graduate Studies may approve; and shall have obtained Class II honours standing in his final undergraduate year.

2*b* Approved graduates of the General Course of this University who have achieved at least B standing in their final year may be considered eligible for admission to the degree after completion of an additional programme (with at least B standing) considered equivalent to a full year of Honour Course work.

2*c* Graduates of other universities will be admitted under 2*a* and 2*b* on proof that the same levels of academic attainment have been reached.

3*a* The candidate shall successfully complete the program of study prescribed and shall complete a research project. The project may, at the discretion of the department, be in the form of a thesis or it may consist of additional course work and a limited research assignment.

3*b* Normally candidates shall be required to attend the University for two academic years. This requirement may be reduced for students who hold the Diploma in Town and Regional Planning, or its equivalent, and who meet the other admission prerequisites.

4*a* Candidates may apply for credit to be allowed for required courses. Such courses passed as part of the Diploma Course in Town and Regional Planning may be given credit. Other courses in this or another university may be considered.

4*b* Candidates holding a bachelor's degree (general) may apply for credit in courses taken in addition to their General Course programme, provided such courses are of an Honour Course level and would be accepted under 2*b*.

5 The thesis shall deal with a subject within the field of theory and practice of planning. Subjects predominantly in the field of the supporting disciplines will not be acceptable.

6 Candidates for the degree shall register with the Secretary of the School of Graduate Studies, submitting evidence from the Department of Urban and Regional Planning that they are acceptable for enrolment.

7 Normally approved titles of theses shall be submitted not later than March 31.
8 Evidence that the candidate has met all requirements shall be forwarded to the Council of the School of Graduate Studies not later than May 6.

DIPLOMA IN URBAN AND REGIONAL PLANNING

In addition to the M.Sc.(Pl.) the Department offers a one-year Diploma in Planning within the Faculty of Architecture, Urban & Regional Planning and Landscape Architecture. The programme is substantially the same as that for the first year of the M.Sc.(Pl.), and adequate performance in the Diploma year, together with the necessary academic standing in the first degree, may make a student acceptable to enter the second year of the M.Sc.(Pl.) programme.

All Diploma students must normally take the following six compulsory subjects:
Theory of Urban and Regional Planning I
Planning Literature
Local Government
Community Planning Law and Administration
Municipal Engineering
Elements of Economics for Planners
and Project Work I
Urban Data and Systems Analysis

Each student must also take one elective course selected from those listed. In addition to those elective subjects listed under 'Details of Courses' electives are also available in urban geography, housing, sociology, and in some other subjects, by arrangement.

To be eligible for the Diploma programme students must be approved graduates of a university or hold an approved professional qualification. Normally the standard of admission will be the same as for the M.Sc.(Pl.), and preference in allocating places will normally be given to M.Sc.(Pl.) applicants. Only a small number of Diploma students are taken and applicants having the admission requirements for the M.Sc.(Pl.) are advised to apply for that degree in the first instance. Overseas students may be accepted in the Diploma programme.

The Diploma programme does not give admission to the Town Planning Institute of Canada, and Diploma students are not normally eligible for CMHC fellowships.

Forms of application may be obtained from the Chairman of the Department of Urban and Regional Planning.

DETAILS OF THE COURSES IN URBAN AND REGIONAL PLANNING

The details of subjects for the M.Sc.(Pl.) and the Diploma are as follows: 'X' denotes a one-term course.
The following courses constitute the Common Frame of Reference and are required for the M.Sc.(Pl.):

2001X History & Development of Planning
H. Blumenfeld, A. J. Dakin
The purpose of this course is to introduce the student to the history of the city and planning and to provide case studies of historical and contemporary planning.

2002X Comprehensive Laboratory I Staff
The purpose of this course is to familiarize the student with basic planning techniques.

2003X Comprehensive Laboratory II Staff
This course gives the student exercise in the application of planning techniques.

2004X Legal, Administrative & Political Bases of Planning
A. Weinrib, M. Brownstone
This course introduces the student to the institutional framework in which planning is carried out.

2005X The Planner and Society Staff
The intention of this seminar is to give the student opportunity to discuss a wide range of matters related to the role of the planner.

2006X Theory of Urban & Regional Planning I A. J. Dakin
The aim of this course is to acquaint the student with the various basic approaches to planning.

2007X Theory of Urban & Regional Planning II A. J. Dakin
This course examines various theories and approaches in greater detail and concerns their application to practice.

2008X Physical & Ecological Bases of Planning E. Mattyasovszky
This course aims to give the student a basic background in resource matters, such as land use capability studies. The emphasis is ecological.
The following courses are electives. Not all are necessarily offered in any one year.

1010X Elements of Economics for Planners J. I. Stewart, G. Hodge
Those facets of economic theory and economic analysis most relevant to urban and regional planning are presented in this course. Material includes micro- and macro-economic theory, Canadian economic history, economic base theory for cities and towns, economics of industrial location, municipal finance, project feasibility of municipal services, urban renewal financing, regional economic theory, economics of transportation, and economics of urban real estate. The questions of land use planning, zoning, value, urban and regional development, and transportation are considered in the context of economic considerations.

1011X Urban Renewal
Detailed methods of urban renewal, rehabilitation, and conservation are examined in relation to over-all planning theory and practice.

1012X Statistics and Methods for Urban Planning J. I. Stewart
(a) Introduction to Statistical Methods
The prospective planner is introduced to the basic statistical tools such as probability, correlation analysis, and multiple regression.
Attention is also given to mathematical models and various uses of finite mathematics in relation to analytical problems the planner must face.
(b) Methods of Urban Analysis for Planning J. Hitchcock
Course material is organized to cover the techniques of land use, population, and economic analysis for urban areas. Students are allowed time to work on actual problems illustrating some of these techniques. Use of the university's computer facilities is encouraged in deriving solutions to some assigned problems.

1013X Transportation H. Blumenfeld
An examination of the role of transportation and communica-

tions in planning, including their influence on land use in relation to population distribution and their economic aspects. The various modes of transportation are examined and related to planning problems.

1014X History and Aesthetics of Planning H. Blumenfeld
This course includes a series of chronologically-arranged case studies. Early planning in the Middle East is examined, and is followed by a detailed study of the Hellenic and Hellenistic city, agora, and acropolis. Roman Britain is used as a case study in planned colonization. The medieval and the renaissance periods are illustrated by Venice and Rome as they have evolved from classical times to the present day. The 18th century English and French planning traditions in Paris and London are examined. The course concludes with an investigation of the social and philanthropic movements of Europe and the grid-iron planning tradition of North America.

1015X Regional Science Methods for Planning G. Hodge
This course presents the basic approach of regional science to the study of spatial phenomena and explores several of the techniques of the field that seem especially relevant to planners. The theoretical bases of regional science are reviewed and techniques of regional population and migration estimation, regional social accounting, comparative cost analysis, industrial locational analysis, input-output models, industrial complex analysis, inter-regional linear programming, and gravity models are discussed. The course concludes with an examination of several case studies of regional science applied to planning problems. Students will be afforded the opportunity to explore the uses of computer techniques in regional science through a practical problem situation.

1016X Municipal and Transportation Engineering
A. P. Bernhart, R. Rice
Water and waste water treatment: planning and locating towns relative to water supply and waste water disposal; sources, biology and cycle of water; purification and distribution of water; collection and treatment of waste waters (domestic and industrial); storm-water runoff; individual water wells, septic tanks and small aerators.

Air Pollution control: sources of air pollution; atmospheric

conditions; and their relation to land use and aids to keep our environment clean.

Transportation: relation of town planning and transportation; highways and railways; rapid transit; transportation by air.

1018X Seminar in Urban Planning (Seminar in the Theory of Architecture in Relation to Planning) A. Waterhouse
The aim of this course is to emphasize a research approach to leading problems in Urban Planning. The material varies from year to year and is made up of such items as the appearance of cities, the emerging megalopolis, studies of cultural trends in relation to planning.

The material of this course is arranged according to the requirements of students.

1019X Seminar in Regional Development Planning G. Hodge
An advanced seminar on the theory, techniques, applications and research needs of regional development planning. Subjects cover the formulation of regional development policy in national and subnational contexts, programming for regional development, and the role of urban systems in regional growth.

1021X Seminar in Regional Planning Aspects of Resource Development E. Mattyasovzky
The purpose of this seminar is to show the planner's role in natural resource development, large scale projects and resource use.

1022X Seminar in Regional Recreation Planning E. Mattyasovszky
The purpose of this seminar is to provide an introduction to the planning of outdoor recreation, including the selection of criteria.

1023X The Urban General Plan J. R. Hitchcock
A comparative review and evaluation of leading concepts of an urban plan and its role in promoting urban development. Such concepts as the official plan, the general plan, and the master plan will be examined along with emerging ideas for urban information systems, programming, and guidance systems. Particular emphasis will be placed on the appropriate plan instrument for the Ontario situation.

1024X Seminar in Housing in Relation to Planning R. Davidson
An analysis of the functioning of the housing markets and its compounds. An evaluation of existing housing programmes and their implications for resident population of urban areas and review of present housing policy and the type of policy required in the future.

1025X Special Reading Course Staff

1026X Seminar in Social Planning R. Davidson
Analytical description of poverty groups and theoretical disaggregation of the population that comprise impoverished groups in North America. A review of current welfare programmes and construction of future client oriented programmes.

1027X Seminar in Organization and Planning J. R. Hitchcock
This seminar will explore selected aspects of organization theory with an eye to its relevance to planning. Areas of theoretical emphasis and possible planning process will be varied according to the needs and interests of students.

1028X Advanced Research Methods for Planning J. R. Hitchcock
(Reading Course in Research Methods)
This course is intended for the student who is interested in specializing in the analytical aspects of planning and/or is considering working for the Ph.D. degree. Topics will include general principles of research methodology as well as detailed examination of analytical techniques selected on the basis of students' need and interests.

1029X Seminar in the Theory of Urbanism J. R. Hitchcock
An examination of some of the various theories put forth to explain or describe the nature of cities and the process of urbanization. The course is intended to give the student perspective on the current forces shaping cities and to provide some bases for evaluating the changes now taking place. Major emphasis will be placed upon urbanization as a social, rather than a physical phenomenon. Students will be given an opportunity to develop and pursue topics of their own choice.

1030X Innovative Planning: Principles and Approaches G. Hodge
This seminar explores the difference between the traditional approach of planning as marginal resource allocation and a new view of planning as leading to structural transformations of existing situations. Situations will be examined where the re-ordering of priorities and goals, the building of new institutions, and the selective use of resources are necessary. Discussion will centre on the need for innovative planning in developing countries, in depressed rural areas, and in urban poverty areas.

1031X Introduction to Urban Planning A. Waterhouse
The aim of this course is to give an insight into the urban planning process in North America. Broad economic, social, political, and historical aspects of cities, are discussed and related to planning. Emerging issues concerning fringe problems, housing, and urban renewal activities are considered. The planning of Metropolitan Toronto is used as a case study.

1032X Seminar on Metropolitan Toronto Planning A. J. Dakin
This seminar deals with the evaluation of the planning process in the area. It includes critical review of the Metro plan, the City plan and the plans of certain municipalities. Some history is included and attempt is made at evaluation theory.

1033X Research Seminar on Visual Aspects of the Urban Environment A. Waterhouse
The seminar will examine the ways in which city dwellers respond to the changing visual pattern of building and streets. A research project will attempt to discover the nature of response to specific visual aspects of Toronto.

1034X Economics of Land Use J. I. Stewart
Canadian economic history and basic micro- and macro-economic theory are reviewed with particular reference to their application to land use, values and industrial location in Canada. The questions of planning, zoning, transportation, and urban development are considered in the context of land use economics. Explanations and illustration are given of real estate appraisal, theory and practice, with particular refer-

ence to its strong and weak points from the viewpoint of its use in planning decisions.

1035X Urban Data Systems and Analysis J. Paris
This course is devoted specifically to encouraging an appreciation of the nature of data needed in making urban planning decisions. On the basis of lecture material and exercises, it is also hoped to develop the student's competence in handling and manipulating urban data, including the use of electronic data processing (EDP) equipment.

1036X Local Government E. Hardy
A political science lecture course, whose purpose is to acquaint the student with the place of local government in the provision of public services throughout Canada. Comparison is made with local government in England and the United States. Particular stress is placed upon evaluation of powers, structure, organization, administration and financing, including relationships with the responsible senior level of government.

1037X Research Seminar in the Urban Field G. Hodge
A much enlarged space for urban living encompassing a much more diverse set of human activities and movement patterns may now be perceived as the reality of the present urban environment. Existing research pertaining to the 'urban field' of Toronto will be examined by the seminar in order to clarify our perceptions of this emerging environment. Discussion will centre on methodological approaches to urban field phenomena and participants will present their own research on the question.

1038X Programming for Urban and Regional Development G. Hodge
This seminar is concerned with that part of the planning process in which plans are refined to projects over time. Various strategies and techniques are examined for designing programmes. This is a new course.

1040X Urban Spaces: Case Studies I. Koroknay
This course gives a critical analysis of various examples of urban spaces.

1041X Planning Environmental Improvement E. Mattyasovszky
Study of the quality of environment. Examination of the measures necessary for maintaining land resources and controlling pollution and environmental deterioration. The ecological approach in planning is used.

1042X Planning for the Residential Component A. Waterhouse
The design and planning of residential areas; housing markets and the economics of residential development; programmes of renewal and rehabilitation; the roles of governments and private enterprise; new forms of housing.

1043X Planning for Various Components R. McCabe
Discusses urban components in relation to each other and their detailed planning as part of the planning process.

1044X Analytical Techniques for Planning J. Paris
Provides in a laboratory environment practical instruction in standard analytical techniques. The emphasis is put on practical analysis and interpretation of the results in urban problems.

Concentrations
The student is required to carry out courses (including practical work) which satisfy a concentration. These change from year to year according to the requirements of the study body. Appropriate courses are arranged as necessary.

Thesis
The thesis shall be a topic within the field of the current theory and practice of planning. Topics which belong largely to the fields of the supporting disciplines will not be considered suitable. Although the major purpose of the thesis is to enlarge the student's skills in and understanding of planning matters, it is expected that the thesis will be a contribution to knowledge. Subjects of a purely descriptive kind will not in general be acceptable, and the student will be expected to offer a critical evaluation of his subject.

As an alternative to the thesis a student may offer two additional one-term courses and a substantial research assignment.

CENTRE FOR URBAN AND COMMUNITY STUDIES

The Centre conducts seminars, sponsors research and offers opportunities for staff and senior graduate students in urban and regional affairs to make contact on an interdisciplinary basis.

DEPARTMENT OF
LANDSCAPE ARCHITECTURE

DEPARTMENT OF LANDSCAPE ARCHITECTURE

The last 100 years have seen the development of predominantly urbanized societies throughout the world in which little or no thought has been given either to the relationship between human settlement and the regional landscape, or to the kind of environment that is created when cities expand. The countryside, prime farm land, and other natural resources are fast disappearing as urban areas spread and often coalesce. Under these conditions, the city frequently becomes a hazard to physical and mental well-being.

As demonstrated by the civilization of Islamic Spain, Renaissance Italy and 18th century England, man has shown from time to time a better appreciation of the landscape and of the art of garden and park design. Today the concern of landscape architects is to establish a body of principles that will contribute to the intelligent use of natural resources, and the planning and design of open space to meet modern conditions, and thereby to create a better social and physical environment.

Canada's expanding population and economic potential is stimulating widespread development both in urban growth and exploitation of natural resources. Well trained professional men are urgently needed to cope with the social, economic, industrial, recreational and aesthetic problems that are created when such developments occur. This cannot be the role of a single profession but should be the responsibility of a coordinated team of landscape architects, planners, architects and engineers, to name but a few. Landscape Architecture has a vital and unique place in this team. It requires a close working knowledge of the other professions, but is an independent discipline in itself.

The undergraduate programme in Landscape Architecture has been devised to provide the student with the opportunity of sharing design experience and certain lecture courses with architectural students. In the first year the programmes are closely related, and there is a relatively heavy load of lecture subjects. As the course develops, greater emphasis is placed upon studio work, and less upon formal courses of instruction.

A summer programme of about six weeks' duration for field study and the identification of plant material forms an integral part of the course in the first and second years. In addition,

at least four months of approved activity will be required before graduation. When the graduate has completed two years of approved professional experience, he will be eligible for admission to the Canadian Society of Landscape Architects.

General Information

Candidates for the degree of Bachelor of Landscape Architecture should study the regulations and other information that appear in the preceding pages of the calendar.

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CURRICULUM FOR THE DEGREE OF BACHELOR OF LANDSCAPE ARCHITECTURE

First Year Subjects

	Subject No.	Hours per week 1st term Lecture	Lab	2nd Term Lecture	Lab
Landscape Architecture Theory and Design	L.A.101	2	12+	2	14+
Criticism	ARC.1.01/ I+II	2		2	
Introduction to Drawing	ARC.1.80/I	2			
Dendrology	FOR.2		3	1	3
Geography	GGR.100	2	1	2	1
Surveying	L.A.156	1	3	1	2
Plant Material for Landscape Use	L.A.158	(6 weeks summer)			

	Subject No.	Hours per week 1st Term Lecture	Lab	2nd Term Lecture	Lab
Second Year Subjects					
Landscape Architecture Theory and Design	L.A.251	1	14+	1	14+
Landscape Construction A	L.A.252	2	2	2	2
Individual Studio Projects in drawing, painting, sculpture	ARC.2.82/ I + II		2		2
Plant Ecology and Soils	BOTANY	(to be announced)			
Geography	GGR.101	2	1	2	1
*Elective		2		2	
Plant Material for Landscape Use	L.A.258	(6 weeks summer)			
Third Year Subjects					
Landscape Architecture Design	L.A.351		18+		18+
Landscape Construction B	L.A.352	2	3	2	3
History of Landscape Architecture A	L.A.353	2		2	
Landscape Materials and Design A	L.A.358	1	3	1	3
*Two (2) Electives each		2		2	
Practical Experience (summer)					

*see notes re electives on following page.

Fourth Year Subjects

	Subject No.	Hours per week 1st Term Lecture	Lab.	2nd Term Lecture	Lab.
Landscape Architecture Design	L.A.451		19+		19+
Landscape Construction C	L.A.452	1	3	1	3
History of Landscape Architecture B	L.A.453	2		2	
Engineering & Planning Theory	L.A.455	2		2	
Office Practice	L.A.457	1		1	
Landscape Materials & Design B	L.A.458	1	6	1	6
*Two (2) Electives each		2		2	

*Electives may be selected from those offered in the Department of Architecture (see pages 56-62) and/or from other faculties, but the choice is subject to the approval of the instructor giving the course and the year staff of the Department of Landscape Architecture. A one year elective is deemed to be any course of a minimum of two lecture hours per week throughout both terms or the equivalent.
Practical experience of at least 4 months in approved activity before graduation.
Professional experience for at least 2 years after graduation will be prerequisite to membership in the Canadian Society of Landscape Architects.

FIRST YEAR

L.A. 101 Landscape Architecture E. Fife
An investigation into the basic relationships between man and his socio-physical environment in order to gain an understanding of the potentials and inter-relationships of systems in natural and urban areas. Studies in first term include:
1 *Environmental Walks:* A study of existing environments, will be undertaken in order to determine what we perceive and the manners in which we organize these perceptions.

2 *Community Systems:* Through a process of dissection, we shall examine the component parts of an existing urban area, in order to study the relationship of the urban structure to human use and service systems.
3 *Man:* We shall examine the manner in which man moves, congregates and celebrates, and how these activities dictate design direction.
4 *Land:* A study of emotional responses to the natural environment related to an examination of the interrelation of ecological systems and land formation.
5 *Practice:* A study of landscape architecture to evaluate the practice and direction of the profession as related to the student. What is the scope of the profession? Is it fulfilling its obligations as practiced?
Second term combines a study of the process of organization with the evolution of an idea. Emphasis is on the study of a living environment, a community in the process of growth.

ARC 1.80/I **Introduction to Drawing** (see page 61) J. Hall

ARC 1.01/ I + II **Criticism** (see page 55) J. Medjuck

FOR. 2 **Dendrology** W. A. K. Morsink
A systematic study of tree families, genera and species, based mainly on native forest trees and laying special stress on the characteristics which lead to the recognition of the species; also consideration of factors affecting their distribution.

GGR 100 **Geography – Introductory Physical Geography**
Dept. of Geography
Term 1: Geomorphology: Principles of landscape sculpture modern versus classical geomorphology, morphoclimatic controls, weathering, soil formation, the hydrologic cycle, rivers and drainage basins, floods, erosion, pollution, man's role in changing the landscape,
Term II: Climatology: Time and space scales of fluctuations in atmospheric variables; fluxes and balances of radiation, heat, moisture; relationship to other geographically differentiated phenomena.

L.A. 156 **Surveying** B. J. Haynes
General principles and practice of surveying with the tape,

transit and level. Discussion of sources of error in survey work. Elementary topographic mapping by plane-table.

L.A. 158 Plant Materials for Landscape Use

The course provides an introduction to practices and procedures applied to the identification, propagation and maintenance of plant materials for landscape use in Eastern Canada. The aim is to familiarize the student with the use of native and exotic species of trees, shrubs and herbaceous plants, including grasses.

The biological principles underlying the selection of plant materials for a given site, site preparation in advance of transplanting, transplanting operations, fertilization procedures, insect and disease control and pruning procedures are dealt with in the classroom as well as in the field.

The course, which is designed for I and II year Landscape Architectural students, is given over a two-year period from May to the middle of June in each year and includes 96 hours of lectures and seminars, four one-day field trips and a six-day excursion per year. The excursion tours the Ottawa-Montreal area and the Niagara-Rochester area in alternate years.

Professor Jorgensen, Professor Morsink, staff from the Royal Botanical Gardens, Hamilton and staff from Department of Landscape Architecture.

SECOND YEAR

L.A. 251 Landscape Architecture Theory and Design F. D. Milus

A study of the physical elements that constitute the framework of outdoor space in an urban community related to the psychological, social and biological forces that affects the content and organization of the framework.

Studies will include:

1 *User Requirements* – an investigation of peoples' activities and requirements for visual and acoustic privacy, microclimate control, access control and space by undertaking case studies for a family's private outdoor living space and pre-school children's play spaces.

2 *Water* – an investigation of the aesthetic, ecological, and engineering characteristics of water and the organization of an impounded water body in (a) a regional recreation space and (b) a neighbourhood recreation space.

3 *Landform* – an investigation of the aesthetic and engineering characteristics of landform and soils and the changes in organization and form to serve requirements for activities, space, and enclosure in a residential superblock.
4 *Plants* – an investigation of the ecological and aesthetic characteristics of plant materials and the organization of plants on the land to serve requirements for activities, space, and enclosure in a residential superblock.
5 *Movement Systems* – an investigation of path design criteria and organization as a primary force in determining residential community structure and form.
6 *Structures and Building Materials* – an investigation of basic structure methods of joining, and building material types and their characteristics.

L.A. 252 Landscape Construction A M. Hough
An introduction to grading and drainage, structural systems, building materials and equipment used in constructing outdoor space and facilities. The objective is to identify and apply principles of grading and drainage, principles of structure and the properties of building materials to current problems in the urban community. Lectures and studio work are supplemented by a diverse programme of field studies.

ARC 2.82/ I + II Individual Studio Projects in Drawing, Painting, Sculpture (see page 61) J. Hall

BOTANY (to be announced)

GGR 101 Geography 101 – Environment and Man Dept. of Geography
A study of relationships of man and the physical environment. Man's quest for control of physical-biotic processes, consequences of man's intentional and unintentional modifications of the environment; changing values toward nature and resources. First term largely historical; second term contemporary to deal with such problems as pollution and overpopulation.

L.A. 258 Plant Materials for Landscape Use
Advanced plant materials of identification, propagation and maintenance. Prerequisite L.A. 158

THIRD YEAR

L.A. 351 Landscape Architecture Design M. Hough
The objective of the programme is to continue the approach to problem solving commenced in the second year. Problems are of a more advanced nature, including use of space, community, and large recreation development. They involve the application of knowledge gained from technical courses in previous years. Where possible problems are related to actual situations to provide experience and dialogue with clients, programme development, and consultation with related professional disciplines.

L.A. 352 Landscape Construction B F. Milus
A study of the broader aspects of landscape construction; including soils, earthwork, grading, retaining walls, drainage, sewage treatment, water supply and impoundments. Lectures and visits to government and private offices are expanded by studio problems, research and field investigation.

L.A. 353 History of Landscape Architecture A E. Fife
A survey of the ways in which man has consciously and unconsciously shaped his visual environment with an emphasis upon the public square and the garden as a controlling theme of organized space.

L.A. 358 Landscape Materials and Design A E. van der Meulen
A course dealing with landscape materials, their character and use in design. It is concerned with materials from structural, technical and aesthetic points of view, how they can be combined in design, and their physical and emotional impact on an observer. The course is very closely related to studio work, Landscape Construction, and History.

FOURTH YEAR

L.A. 451 Landscape Architecture Design R. A. Strong
A series of 4 problems with subcategories culminating in a terminal project of 6 weeks, in which the student carries out the full process of design and implementation, dealing with the shaping of the private and public domains. Special emphasis will be put on the new ecology of man-made objects on the natural landbase. Thus the imposition of various transport systems on the land, the edges of communications, and

solutions to a combination of these two will be studied and related problems pressed to a solution. Visiting lecturers will guide students through programming as well as managing and implementing their projects. Engineers, economists, planners, conservation and municipal experts will be aiding the student through the receptive phases, with a landscape architect Year-Master directing the overall programme. It is stressed that the students' initiative in scheduling and programming the projects is a major element of the final year course.

L.A. 452 Landscape Construction C. E. Fife
Application of and elaboration on the 352 material, with an emphasis on new methods and the use of various available professional techniques, through the engaging of sub-consulting such as aerial photography, soil mechanics, etc. This course will correspond with the subjects in course 451.

L.A. 453 History of Landscape Architecture B M. Hough
Students will write a thesis based on lectures and research on one of the general aspects of man's relation to the land and the changes he has brought about during his short appearance on the earth; this may relate to the changes brought about by urban development, agricultural operations, transportation expansions, etc. This course will relate to the subjects in 451.

L.A. 455 Engineering and Planning Theory E. van der Meulen
Integration of planning principles and engineering methods and approaches with Landscape Architecture will be studied in a series of seminars by visiting lecturers, to stress and evaluate the interrelationships of these disciplines and its practical application.

L.A. 457 Office Practice R. A. Strong
A series of seminars and lectures, with a final written report on the professional activity in practice, as it relates to legal, administrative, organizational, philosophical and public relations areas.

L.A. 458 Landscape Materials and Design B. F. Milus
This course will relate directly to 451 and will derive its subjects from matters arising out of the technical and practical aspects of that course (451).

The University of Toronto issues the following calendars and other publications concerning courses of instruction given by the University, and one of which may be had on application to the Office of Admissions of the University, or to the Secretary of the Faculty, School or Institute about which information is sought.

ADMISSION INFORMATION:	Admission Awards Undergraduate Admission Handbook Undergraduate Admission Bulletin
APPLIED SCIENCE AND ENGINEERING:	Faculty of Applied Science and Engineering Engineering at Toronto – descriptive brochure
ARCHITECTURE:	Faculty of Architecture, Urban and Regional Planning and Landscape Architecture
ARTS AND SCIENCE:	New Programme 1970 – St. George Campus Scarborough College Calendar Erindale College Calendar
BUSINESS:	School of Business – Graduate Programmes in Business Administration
CHILD STUDY:	Institute of Child Study
DENTISTRY:	Faculty of Dentistry Division of Postgraduate Dental Education Division of Dental Hygiene
EDUCATION:	The College of Education Graduate Degrees in Education*
EXTENSION:	Degree Courses in Arts, Science and Nursing Certificate Course in Business, Public Administration, Criminology and Public Health Nursing Courses in the Liberal Arts and Social Sciences (Non-Degree) Business, Engineering and other Professional Courses (Non-Degree)
FOOD SCIENCES:	Faculty of Food Sciences
FORESTRY:	Faculty of Forestry Diploma Course in Resource Management
GRADUATE STUDIES:	School of Graduate Studies
HYGIENE:	School of Hygiene
LAW:	Faculty of Law
LIBRARY SCIENCE:	School of Library Science
MEDICINE:	Faculty of Medicine, Professional Course Division of Rehabilitation Medicine Division of Postgraduate Medical Education
MUSIC:	Faculty of Music The Royal Conservatory of Music School of Music Year Book General Syllabus Pianoforte and Theory Syllabus
NURSING:	School of Nursing
PHARMACY:	Faculty of Pharmacy
PHYSICAL AND HEALTH EDUCATION:	School of Physical and Health Education
SOCIAL WORK:	School of Social Work

*Write to: Ontario Institute for Studies in Education, 252 Bloor Street West, Toronto 181, Ontario.

University of Toronto
Faculty of Arts and Science
1970-1971 Calendar
St. George Campus

new programme 1970

University College
Victoria College
Trinity College
St. Michael's College
New College
Innis College

UNIVERSITY OF TORONTO PRESS
1970

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SCHEDULE OF DATES 1970 - 71

1970

July	1	Wednesday	Dominion Day.
July	6	Monday	Summer day session begins at 9 a.m. (Applications from new and Special Students must have been submitted by 15 May and all students registered by 18 June 1970.)
July	10	Friday	Last day to apply for August supplemental examinations.
August	1	Saturday	Last day for new and Special Students to apply for admission to the Winter Session.
August	3	Monday	Civic Holiday. (All classes cancelled.)
August	14	Friday	Last day of summer session lectures.
August	17 - 21	Monday-Friday	Supplemental and summer session examinations.
September	7	Monday	Labour Day.
September	10	Thursday	Registration begins. See pages 289-290.
September	20	Sunday	The late registration penalty will be enforced after this date.
September	21	Monday	Lectures and laboratory classes begin at 9 a.m.
September	28	Monday	Meeting of the Council.
October	8	Thursday	Meeting of the Senate.
October	12	Monday	Thanksgiving Day.
October	13	Tuesday	Meeting of College Councils.
October	15	Thursday	Last day by which changes of course must be made.
November	2	Monday	Meeting of the Council.
November	11	Wednesday	Remembrance Day.
November	13	Friday	Meeting of the Senate.
November	16	Monday	Meeting of College Councils.
November	20	Friday	Last day to confirm student programmes with College Registrars.
November	20	Friday	Last date to withdraw from a first-term course without academic penalty.
November	20	Friday	Last date by which Third Year students should notify their College Registrar if they wish to receive their degree.
November	20	Friday	Fall Convocation
November	30	Monday	Meeting of the Council.
December	11	Friday	Meeting of the Senate.
December	14	Monday	Meeting of College Councils.
December	18	Friday	Last day of classes. Term ends at 5 p.m.
December	25	Friday	Christmas day.

1971

January	1	Friday	New Year's Day.
January	4	Monday	Second term begins. Classes commence at 9 a.m.
January	4	Monday	Meeting of the Council.
January	8	Friday	Meeting of the Senate.
January	11	Monday	Meeting of College Councils.
January	20	Wednesday	The second term instalment of fees must be received by this date.
February	1	Monday	No second-term course may be begun after this date.
February	1	Monday	Meeting of the Council.
February	12	Friday	Meeting of the Senate.
February	14 - 20		Reading week - lectures and laboratory classes will not be held.
February	15	Monday	Last day for withdrawal without academic penalty or for transfer to Extension.
February	15	Monday	Last day to apply for Smith College Exchange or for study elsewhere.
February	15	Monday	Meeting of College Councils.
March	1	Monday	Meeting of the Council.
March	12	Friday	Meeting of the Senate.
March	15	Monday	Meeting of College Councils.
March	29	Monday	Meeting of the Council.
April	1	Thursday	Last day for new and Special Students to apply for admission to the summer evening session.
April	7	Wednesday	Meeting of the Senate.
April	9	Friday	Good Friday.
April	10	Saturday	No lectures or laboratory classes after this date. All term assignments should be completed by this date.
April	12	Monday	Meeting of College Councils.
April to May	19 7	Monday Friday	Annual examinations.
May			Meeting of the Council at the call of the chairman.
May	14	Friday	Meeting of the Senate.
May	15	Saturday	Last day for new and Special Students to apply for admission to the summer day session.
May	17	Monday	Summer evening session begins.
May	24	Monday	Victoria Day.
May	28	Friday	Start of University Commencement.
June	1	Tuesday	Applications for admission to regular full-time courses in the 1971-72 session must be received by this date.
July	5	Monday	Summer day session begins.
August	16 - 20	Monday-Friday	Supplemental and 1971 summer session examinations.

THE FACULTY OF ARTS AND SCIENCE AND ITS COLLEGES

In the Faculty of Arts and Science there are eight colleges: University College, Victoria College, Trinity College, St. Michael's College, New College, and Innis College located on the St. George campus in downtown Toronto; Scarborough College located twenty miles away, in the East of the city and Erindale College located twenty miles West. Every student in the Faculty must register in one of these colleges if he wishes to proceed towards a degree on a full-time basis in day classes. Students proceeding towards a degree on a part-time basis do so through the Division of University Extension, which offers courses on the St. George, Scarborough and Erindale campuses.

Classes in Arts were first offered in Toronto in the year 1843 at King's College in the unoccupied legislative buildings on Front Street. During the next decade a residence was built at Queen's Park, King's College was secularized and its name changed to the University of Toronto. In 1853 the University itself became solely an examining and degree-granting body, and "University College" was created to do the entire work of instruction in Arts. In the next half-century Victoria University, the University of Trinity College and the University of St. Michael's College came into federation with the University of Toronto, agreeing to suspend their own degree-granting powers in disciplines other than divinity in favour of the University. The name of the Faculty was changed to "Faculty of Arts and Science" in 1960, and the Faculty Office moved to Sidney Smith Hall, 100 St. George Street. Since that date New College and Innis College have been established on the St. George campus, followed by Scarborough College and Erindale College on their own campuses. Students of this Faculty registered in any one of these eight colleges may now receive the Bachelor of Arts, or Bachelor of Commerce, or Bachelor of Science degree of the University of Toronto. The annual examinations are conducted by the University, which also grants academic standing upon the results of these examinations and confers the degree.

The colleges on the St. George campus give instruction in "college subjects". These are the subjects taught in each college by the college departments of Classics, English, Ethics, French, German, Near Eastern Studies, Philosophy (St. Michael's College) and Religious Studies. At present English and French are taught in New College by staff members cross-appointed between New College and University College. Students of New College receive instruction in other college subjects through University College, which is also responsible for teaching college subjects to students of Innis College. "University subjects" are those which are normally taught in University buildings to students of all colleges by members of the following departments:

> Anthropology, Astronomy, Botany, Chemistry, East Asian Studies, Fine Art, Geography, Geology, History, Islamic Studies, Italian and Hispanic Studies, Mathematics, Philosophy, Physics, Political Economy, Psychology, Slavic Languages and Literatures, Sociology, Zoology.

By a system of cross-appointments between the "University Departments" and the colleges more and more students are being taught "University subjects" in their colleges by members of the University staff. All courses offered in Scarborough College and Erindale College are taught on their respective campuses. Members of the teaching staff in these colleges hold dual appointments in their college and in the appropriate university or college department.

ST. GEORGE CAMPUS

UNIVERSITY COLLEGE

Principal ..... D. V. LePan, M.A., D.Litt., F.R.S.C.
Vice-Principal ..... V. E. Graham, M.A., Ph.D., D.Litt., F.R.S.C.
Registrar ..... R. M. H. Shepherd, M.A.
Assistant Registrar ..... Mrs. N. L. Bliss, B.A.
Dean of Men and Administrative Assistant to Principal ..... E. M. Howarth, M.A.
Dean of Women ..... Miss C. L. Grant, B.A., M.S.W.
Librarian ..... Mrs. J. Cooper, B.A., B.L.S.

University College, established in 1853, was the original Provincial Arts and Science College of the University. Complete information is contained in the *University College Bulletin*, mailed in January to all Ontario secondary schools, and obtainable from the College Registrar. In brief, the College offers the following facilities to its men and women students:

(a) The Laidlaw Library, equipped with a spacious Reading Room and Reference Room, and the Refectory, where cafeteria service is provided.

(b) The Sir Daniel Wilson Residence for Men, centrally located at 73 St. George Street, provides room and/or board for 183 students in single rooms divided into six Houses. An inclusive fee is charged. Requests for information and application forms should be made to the Dean of Men, University College. Application for a place in residence should be submitted as early as possible.

(c) Whitney Hall Residence for Women is conveniently located at 85 St. George Street. It accommodates 226 women students in four Houses, each with its own facilities. There are single and double rooms, each furnished as a combined bedroom and study. Inquiries should be addressed to the Dean of Women, University College.

(d) The Women's Union, 79 St. George Street, provides a centre for the undergraduate women of University College, resident and non-resident. It contains a dining hall, common rooms, and a small theatre for student productions.

VICTORIA COLLEGE

President and Vice-Chancellor of Victoria University ..... Rev. A. B. B. Moore, B.A., B.D., D.D., LL.D.
(After 1 July 1970) ..... J. E. Hodgetts, M.A., Ph.D., F.R.S.C.
Principal Emeritus ..... H. Bennett, B.A., Ph.D., LL.D.
Principal ..... J. E. Hodgetts, M.A., Ph.D., F.R.S.C.
Registrar ..... A. C. M. Ross, M.A., Ph.D.
Director of Student Aid ..... R. H. MacDonald, A.M., Ph.D.
Bursar ..... F. C. Stokes, M.A.
Dean of Men ..... M. S. Cross, M.A., Ph.D.
Dean of Women ..... Miss Margaret Carmichael, B.A., A.R.C.T.
Librarian ..... Miss L. D. Fraser, M.A., B.L.S.

Victoria College, established in 1836 as a Methodist foundation, entered into federation with the University of Toronto in 1892 and, since 1926, has been related to the United Church of Canada. It is open to students of all religious denominations and offers the following residence facilities.

Residences for Men

The Victoria University Men's Residences accommodate 254 students, consisting of students enrolled in Victoria College (Arts and Science) and Emmanuel College (Theology) and students from other colleges and Faculties as space permits. Students who plan to enter Victoria College and who wish to live in residence should apply as early as possible and not wait until they receive their final acceptance into the University of Toronto. If they are not accepted by Victoria College or change their plans, they may cancel their reservation by written notification.

Burwash Hall is the dining hall for all students in residence, and for non-residence students of Victoria and Emmanuel Colleges.

Application forms and further information may be obtained from the Dean of Men, Victoria College, 73 Queen's Park Crescent, Toronto 181.

Residences for Women

The Victoria College Women's Residences provide accommodation for 268 women students. When applications exceed available spaces rooms are assigned in order of academic standing. The Dean of Women of Victoria College, the Warden, Dietitians, and resident Dons are in charge.

Meals are served in the Annesley Hall dining room and the Wymilwood cafeteria. Each house has a common room, kitchenette, telephone and laundry. There are libraries in Annesley Hall and Margaret Addison Hall.

Application forms and further information may be obtained from the Dean of Women, Victoria College, 73 Queen's Park Crescent, Toronto 181.

Victoria College Student Union

Wymilwood is available for the use of all Victoria College students. There are common rooms, a reading room, a record room, and a coffee shop. Rooms are available also for the use of Victoria College and University of Toronto societies upon application made to the office of the Dean of Women in the new Academic Building, Victoria College.

TRINITY COLLEGE

Provost and Vice Chancellor ..... Rev. D. R. G. Owen, M.A., Ph.D., D.D., D.C.L.
Dean of Arts ..... A. Dalzell, M.A., B.Litt.
Dean of Men ..... G. A. B. Watson, M.A., S.T.C.
Principal of St. Hilda's College and Dean of Women ..... Miss M. H. Seaman, M.A.
Acting Registrar ..... R. L. Cummins, B.A.
Librarian ..... Miss B. Saunders, B.A., B.L.S.
Bursar ..... G. O. Shepherd, B.Com.

Trinity College was founded in 1852 as an independent university and entered federation in the University of Toronto in 1904. Trinity is the smallest of the federated colleges in the Faculty of Arts and Science, having about 700 undergraduate students. While historically an Anglican foundation, it is open to students of all denominations.

The main quadrangle on Hoskin Avenue includes the Chapel, Library and administrative offices which adjoin the men's residence, common rooms and dining hall. Lecture rooms and the offices of the teaching staff, together with the Buttery (an informal coffee shop and student activity centre), are in the modern Gerald Larkin Academic Building which extends to Devonshire Place. Opposite it is St. Hilda's College, the residence and centre for women students registered at Trinity.

Residential accommodation is provided for 220 men in Trinity College and for 120 women students in St. Hilda's College. Further information about both residences and about the College gen-

erally is obtainable from the College Registrar. The Registrar will also be glad to see prospective students by appointment.

ST. MICHAEL'S COLLEGE

President ..... Rev. J. M. Kelly, M.A., Ph.D.
Vice-President and Registrar ..... Rev. H. V. Mallon, M.A.
Assistant Registrar ..... Rev. A. F. Waligore, M.A.
Director of Student Awards ..... Rev. H. F. Couglin, M.A., S.T.D.
Bursar ..... Rev. N. Iversen, M.A.
Dean of Men ..... Rev. W. Reddall, B.A.
Dean of Residence (Women)
Loretto College ..... Sister Maria Lanthier, B.A.
St. Joseph's College ..... Sister Janet Fraser, B.A.
Librarian ..... Rev. M. B. Black, M.L.S.

St. Michael's College, the Catholic college in the federation, is open to men and women students of all denominations. All prospective students are welcome to see the Registrar.

Application for residence, distinct from application to the university, should be made early in the spring.

Residences for Men

For purposes of organization and for academic reasons, St. Michael's makes use of the residential House System. There are ten houses which provide accommodation for 360 students. Each house is under the supervision of a don to whom the students have access at any time. The students' rooms are furnished as combined bedrooms and studies.

St. Michael's College offers accommodation to a limited number of students from other faculties in the University. This is allocated after August 15.

Applications for admission to residence should be made to the Dean of Residence, St. Michael's College, Toronto 181.

Residences for Women

Residence is provided for women students at St. Joseph's College, 90 Wellesley Street West, and at Loretto College, 70 St. Mary Street. Application for admission to residence may be obtained by writing to the Dean of either College. Application should be made early.

NEW COLLEGE

Principal ..... D. G. Ivey, M.A., Ph.D.
Registrar ..... F. A. Hare, M.A.
Dean of Men ..... I. R. Kurtz, M.A.
Dean of Women ..... Miss A. Huntingford, B.A.
Librarian ..... Miss E. Sherritt, B.A., B.L.S.

New College, established in 1962, is open to men and women of all Faculties and Schools of the University. Students in the College, whether engaged in the humanities, social sciences, pure sciences or in professional studies, have an opportunity to meet others from quite different fields of study and thus to broaden their views.

Students enrolled in the Faculty of Arts and Science receive instruction in their own college building in some of their "college subjects", while for others the New College classes are merged with those of University College. Students in the professional divisions attend the regular classes of those divisions. Tutorial assistance is provided in various subjects, including English, Chemistry and Physics.

Students entering the First Year of any Faculty or School, who wish to become members of New College, apply to the Registrar of the University on the regular application form, indicating New College as the College of their choice.

New buildings, centrally located on the west campus, provide academic, social and dining facilities for all members of the College, and in addition provide accommodation for 291 men and 386 women in residence. Students who wish a place in residence apply directly on a standard form which may be obtained from the Dean of Men or Dean of Women, New College.

INNIS COLLEGE

Principal ..... R. S. Harris, M.A., Ph.D.
Registrar and Academic Co-ordinator ..... D. B. King, M.A.
Associate Registrar ..... Miss P. C. Cole, B.A.

Innis College was constituted on July 1, 1964, and admitted its first students in the following September. It is a multi-faculty college of the University of Toronto, and includes undergraduate students in all Faculties and Schools of the University.

A special feature is the Writing Laboratory. This service offers assistance to Innis College students in the skills and methods of writing essays and other academic reports. A staff of experienced teachers is available to give individual instruction.

In September, 1969, Innis College introduced experimental courses which focus on contemporary themes and problems. These are listed on pages 154-155 of this Calendar.

The College has limited residential space available in houses on campus. Separate application for residence accommodation must be made directly to the Residence Co-ordinator of Innis College.

SCARBOROUGH CAMPUS

SCARBOROUGH COLLEGE

Principal ..... A. F. W. Plumptre, C.B.E., M.A.
Dean ..... S. J. Colman, M.A.
Assistant Dean ..... J. Riddick, B.Sc., Ph.D.
Registrar ..... A. J. G. Patenall, Ph.D.
Assistant Registrar ..... N. H. Dobbs, B.A.
Assistant Registrar ..... D. Keeling, M.A.
Librarian ..... J. L. Ball, M.A.

Scarborough College, which enrolled its first students in 1965, offers the First, Second and Third Years of the New Programme of the Faculty of Arts and Science. Beginning in 1971-72, the College expects to offer some Fourth Year programmes.

The College is located in West Hill, at the eastern end of Metropolitan Toronto, but is easily accessible from central Toronto by the Don Valley Parkway and the Macdonald-Cartier Freeway, and by the free College bus service to and from the St. George campus and the eastern end of the T.T.C. subway.

Scarborough College students have available at their campus first-rate teaching, library and recreational resources, and may also draw on those of the central, St. George campus.

The College is distinctive in several ways. First, it makes available to its students and faculty the advantages of membership in a large institution of international renown, but in the more personal environment of a small, liberal arts college. Secondly, the College is a centre for innovation in curriculum and teaching methods. Thirdly, it is itself architecturally spectacular.

Students who wish to apply for admission to Scarborough College should apply in the usual manner through the Office of Admissions of the University of Toronto and should indicate Scarborough College as the college of their choice.

A large number of summer and winter evening courses are offered by the College to students of the Division of Extension. For 1970–71, administration and counselling services will be provided by the College for Extension students enrolling in these courses.

The College *Calendar* and any further information may be obtained by writing: The Office of the Registrar, Scarborough College, 1265 Military Trail, West Hill 783, Ontario (telephone 284–3127).

ERINDALE CAMPUS

ERINDALE COLLEGE

Principal ..... J. T. Wilson, O.B.E., Ph.D., Sc.D., LL.D., D.Sc., F.R.S., F.R.S.C.
Dean ..... E. A. Robinson, D.Sc., Ph.D., F.C.I.C.
Associate Dean ..... W. J. Huggett, M.A., Ph.D.
Associate Dean ..... I. M. Spigel, M.A., Ph.D.
Registrar ..... J. J. Rae, M.A., Ph.D., F.C.I.C.
Assistant Registrar ..... L. J. Elmer, B.A., S.T.D.
Librarian ..... H. L. Smith, B.A., B.L.S.

Erindale College, the newest of the University's colleges, enrolled its first students in 1967. It is located in the Town of Mississauga on Mississauga Road (Streetsville Road), less than a mile north of Highway 5 and adjacent to the Credit River. In 1970 the College will open the first stage of its new college complex which will greatly increase its facilities for teaching and research. The College has been planned with the needs of the undergraduate student centrally in mind and its rural campus provides a good recreational and learning environment in a relaxed atmosphere. Students and faculty may also make use of the facilities on the central St. George campus, including the Library and Hart House.

In 1970 students will be enrolled in the first three years of the 'New Programme' and fourth year programmes will probably be introduced in 1971. While the degrees offered and the standards are common with those of the rest of the University, the new campus provides unique opportunities for innovation and experimentation in curricula and teaching methods. Students participate fully in College government and benefit from membership in a liberal arts and science college of moderate size within a large university of international reputation.

Application to Erindale College is made through the Office of Admissions of the University and prospective students should indicate Erindale College as the college of their choice on their application form.

The College has limited residential space available in houses on the campus and students should write to the Assistant Registrar for further information. General information about the College and the Calendar may be obtained by writing to the Registrar, Erindale College, 3599 Mississauga Road, Clarkson, Ontario.

Regular free bus services connect the College to the St. George campus and to the Islington Avenue terminal of the Toronto subway.

Courses in the Division of University Extension are also offered on the campus during the Winter Session and some courses in the Summer Evening Session are being planned for 1970. Information may be obtained from the College or from the Division of University Extension.

ALL CAMPUSES

DIVISION OF UNIVERSITY EXTENSION

Director ..... G. H. Boyes, M.A.
Associate Director ..... E. M. Gruetzner, B.A.

The Faculty of Arts and Science through the Division of University Extension serves an increasing number of adults who, while employed during the daytime, wish to improve their academic qualifications for personal or professional reasons. Qualified applicants may proceed as part-time students in Extension, to a bachelor's degree.

The summer session provides six weeks of concentrated daytime study for students who are free to attend lectures in July and August. In the summer evening session, which commences in May and ends in August, classes are conducted twice weekly. In the Winter Session classes are held from September to April.

In addition to the courses offered in Extension on the St. George campus, and as an integral part of that programme, courses are offered on the Scarborough College campus and Erindale College campus.

The calendar entitled "Degree Programmes in Extension" describes in detail the procedure for admission to, and registration for, classes in both winter and summer sessions, and other regulations pertaining to the programme of studies. Copies are available on request from the Director, Division of University Extension, 84 Queen's Park, Toronto 181. Telephone 928–2405.

REQUIREMENTS FOR STANDING

Under the New Programme, each student in full-time attendance in the Faculty of Arts and Science devises his or her own programme by combining together each year five full courses chosen to fit the student's interests, subject only to the following:

(a) All stated prerequisite and co-requisite requirements shall be satisfied.
(b) Any two half courses are equivalent to one full course; they may be from different subjects.
(c) An extra full or half-course (not for credit towards a degree) may also be taken in each year, and standing obtained will be recorded.

FIRST YEAR PROGRAMME

A student shall be said to have completed a First Year programme when he has obtained standing in five courses designated as being available to First Year students.

A student may not begin any courses not offered to First Year students until he has either:

(a) completed a First Year programme, or
(b) has standing in four courses of a First Year programme with an overall average (in these four courses) of at least 60%.

SECOND YEAR PROGRAMME

A student shall be said to have completed a Second Year programme when he has obtained standing in ten courses, at least three of which must be 200- or higher-series courses.

THIRD YEAR PROGRAMME AND REQUIREMENTS FOR THREE-YEAR DEGREE

A student shall be said to have completed a Third Year programme and shall be entitled to receive a Bachelor of Arts or Bachelor of Science degree when he has:

(a) obtained standing in fifteen courses at least eight of which must be 200- or higher-series courses;
(b) a final mark of 60% or better in each of at least eight of the fifteen courses. Of these eight at least four must be 200- or higher-series courses;
(c) for a Bachelor of Science degree, included in the eight or more required 200- or higher-series courses at least six courses offered by one or more of the following departments: Astronomy, Botany, Chemistry, Geography,* Geology, Mathematics, Physics, Psychology, Zoology or certain courses offered by other faculties.

Note: A student should notify his College Registrar no later than November 20th if he wishes to receive his degree. When it is conferred, the designation "Bachelor of Arts (Three-Year)" or "Bachelor of Science (Three-Year)" will appear on his academic record.

*The following courses may be included in a B.Sc. programme: GGR 203S, 205F, 207F, 208S, 270, 301, 302F, 303S, 305S, 491.

ENTRY INTO A FOURTH YEAR PROGRAMME

A student shall be permitted to enter a Fourth Year programme only if he has completed the requirements for a bachelor's degree as described above.

FOURTH YEAR PROGRAMME AND REQUIREMENTS FOR A FOUR-YEAR DEGREE

(a) A student shall be said to have completed a Fourth Year programme and shall be entitled to have the designation "Bachelor of Arts (Four-Year)" or "Bachelor of Science (Four-Year)" entered on his record when he has:
  (i) qualified for a 15-course degree;
  (ii) completed an additional five courses, no more than one of which may be a 100-series course;
  (iii) obtained a final mark of 60% or better in each of at least four of the five courses;
  (iv) for a Bachelor of Science degree, included in the twelve or more required 200- or higher-series courses at least nine courses offered by one or more of the following departments: Astronomy, Botany, Chemistry, Geography (see courses listed under "Third Year Programme"), Geology, Mathematics, Physics, Psychology, Zoology or certain courses offered by other faculties.

(b) For the degree of Bachelor of Commerce a student must have:
  (i) qualified for a 15-course degree;
  (ii) obtained standing in a total of twenty-three courses as outlined in the calendar for the completion of the "Commerce and Finance Programme";
  (iii) obtained a final mark of 60% or better in each of at least four of the six courses listed for the Fourth Year programme.

REFUSED REGISTRATION IN THE FACULTY

(a) A student will be refused further registration in the Faculty if:
  (i) he fails four courses in his first ten attempts, or
  (ii) he fails five courses in his first fifteen attempts, or
  (iii) he fails six courses, or
  (iv) he fails to satisfy the requirements for a three-year degree in his first twenty attempts.

(b) A student is liable to be suspended from the Faculty for one year if he fails a minimum of two courses at the first attempt in any year. All such students must obtain standing in all but one of the failed courses, or substitutes, before registering again as full-time students.

GENERAL REGULATIONS FOR STANDING

(a) All students admitted to the eight Colleges of the Faculty will normally be expected to take a full programme of studies (five courses) in the winter day session of each year. With the approval of the College concerned and the Faculty exceptions may be made.

(b) (i) A student may withdraw from this Faculty without academic penalty up to February 15th. However, if he withdraws in the Second Term, credit will be retained for any First Term half-courses completed and failure noted for any First-Term half-course failed.

(ii) If exceptional circumstances warrant it a student may be permitted, on petition, to withdraw from not more than one course (or two half-courses) of his programme without academic penalty.

(iii) A student may withdraw without academic penalty and without petition from an extra first term half-course before November 20th and from an extra full- or second term half-course before February 15th.

(c) A student who wishes to enrol in three or fewer courses in any session may be admitted to the Division of University Extension. Such a student will normally enrol in winter evening courses or summer day or evening courses, but may, with the permission of the Department concerned, also enrol in winter day courses. He may take a maximum of three courses in a winter session and two in a summer session. Students may transfer from full-time attendance to the Division of University Extension before February 15th.

(d) Normally, credit towards a degree will not be given for an extra (sixth) course.

STANDING IN A COURSE

The following scale of marks and grades will be used for all courses and half-courses in all years:

Marks	*Grade*
80% – 100%	A
70% – 79%	B
60% – 69%	C
50% – 59%	D
below 50%	Fail

In the case of half-courses, standing must normally be obtained in each half-course attempted. Marks in two half-courses may not be averaged to produce standing in an equivalent whole course, except where the department(s) concerned specify that this will be permitted for particular and stated combinations of two half-courses.

TERM MARKS AND EXAMINATIONS

The method of arriving at a final mark for each course (or half-course) will be decided by the Department offering the course. Final examinations, where required, will be conducted by the Faculty in a special period.

Final examinations will normally be held in 100-series courses. Requests for exemption of courses from this regulation shall be brought before the Council. The final mark in the 100-series courses will normally be made up of a term mark and an examination mark with the restriction that not less than one-third nor more than two-thirds of the final mark will be based on term work.

AEGROTAT CONSIDERATION

If the ability of a student to complete a course is affected by illness or domestic problems, a petition may be made through his College Registrar for consideration by the Faculty. If there are adequate grounds for the petition, the Department concerned will determine the status of the work done by the student and the steps, if any, that he must take in order to complete the course.

Such petitions must be filed on or before the last day of the annual (May) or August examinations, together with a medical certificate which includes a statement that the candidate was examined at the time of the illness, or other evidence to support the petition.

EXAMINATIONS

THE ANNUAL EXAMINATIONS

The annual examinations are held in late April and early May.

Arrangements may be made to enable eligible candidates to write supplemental examinations in one of the following places: Banff, Calgary, Charlottetown, Edmonton, Fredericton, Halifax, Kapuskasing, Kenora, Kingston, Kirkland Lake, London, Montreal, North Bay, Ottawa, Quebec, Regina, Saskatoon, Sault Ste. Marie, St. John's (Nfld.), Sudbury, Thunder Bay, Vancouver, Whitehorse, Windsor, Winnipeg, and London, England. Applications for such arrangements must be made not later than November 20, accompanied by the required supplemental examination fee and the special fee.

Candidates for the annual examinations at outside centres must notify the Secretary of the Faculty before April 1st if they do *not* wish to write one or more of the subjects for which they applied; otherwise the fee will be forfeited.

THE AUGUST EXAMINATIONS

The August examinations are held in the week following the conclusion of summer session classes. They are open to students enrolled in the Summer Session (evening and day) and to students eligible to write supplemental or deferred examinations.

Candidates who are permitted to write supplemental or deferred examinations must submit a completed printed form of application to the Secretary of the Faculty by July 10. After this date an additional fee of one dollar per day to a maximum penalty of $20 must be paid. No application will be accepted after July 31. They may write these examinations at the places listed above as outside centres. Such candidates must make application for this privilege before July 10 and must meet the expenses stated above.

Candidates for the August examinations at outside centres must notify the Secretary of the Faculty before August 1 if they do *not* wish to write one or more of the subjects for which they applied, otherwise the fee will be forfeited.

ATTENDANCE AND EXAMINATIONS

Students proceeding to the degree are required to attend the courses of instruction and the examinations in all subjects prescribed. A student whose attendance at lectures or laboratories, or whose work is deemed by the Council of the Faculty to be unsatisfactory, may have his registration cancelled at any time by the Council.

No candidate will be admitted to examinations unless the Head of his college certifies that he has complied with all the requirements of the college.

Students may rewrite examinations in one or more courses in which they have standing in order to obtain a higher grade in the course(s) provided that they do so at the next set of examinations. Formal application to rewrite must be made in accordance with the above instructions. No change will be made in the overall standing originally obtained.

SUPPLEMENTAL EXAMINATIONS

Students in a First Year programme may write a supplemental examination in August in one failed 100-series course if they have a term mark in that course of at least 60%. Failure in a supplemental examination will not count as a second failure, but will necessitate re-enrolment in the failed course or a substitute.

Students in Second, Third and Fourth Years and Special Students will not be permitted to write supplemental examinations in 100-series courses and none will be offered in 200-, 300- and 400-series courses.

DEGREES

Students are permitted to qualify for only one degree (Bachelor of Arts, Bachelor of Science, or Bachelor of Commerce) by completing a four-year programme of studies.

A student who qualifies for a Bachelor of Arts or Bachelor of Science degree at the end of his Fourth Year will graduate and receive his diploma at that time unless he has already done so at the end of his Third Year.

TRANSCRIPTS

Copies of a student's transcript of academic record will be issued at his request, subject to reasonable notice and a nominal copying fee.

THE PROGRAMME IN ARTS AND SCIENCE

The curriculum in Arts and Science is based on the principle that all students should be allowed access equally to academic resources of the highest quality and the greatest range, so that they can investigate many fields of learning in developing and fulfilling their own particular intellectual interests and abilities. In the First Year, the curriculum encourages a broad investigation of subjects by offering almost unrestricted choice of five of the courses available to first-year students. This freedom allows the student to pursue his own inclinations without necessarily committing himself to any specified long term programme, while at the same time leaving open many possibilities for specialized study in higher years. Since the choice of courses and combinations of courses is largely left to the student, each in effect may follow an individual academic programme from year to year.

The building of such programmes in each year and over the three or four years of study will involve, on the part of a student, not only a prior questioning of personal ambition, values and capabilities—in short, a measure of self-knowledge—but also a considerable investigation of the details in the curriculum of courses offered in the Faculty.

There is a great variety of subjects from which to choose, and of courses within subjects. Once having settled upon an area of interest the next decision will have to do with the degree of intensity or specialization with which the subject will be studied. Then follows the selection of the actual courses to be taken. At each stage in this process consideration will be given to the range of one's interests and, through that, to the relationships between subjects and thus the interconnections between courses.

Ideally, a programme of study should not just be a collection of courses but, at least potentially, an organic unity. One programme may be completely diversified over five or six subjects in each year and a much larger number in three or four years. Another may be highly concentrated in one subject to the exclusion of all but a few courses in closely related fields. The majority will range between these extremes, taking well-planned combinations of subjects and carefully chosen courses.

Some individual courses are themselves a combination of subjects, and a new series of these called "Interdisciplinary Courses" is being developed by the Faculty. Here the subjects and the instructors who represent them mutually support one another in the pattern created for the particular course. While in general interests tend to lean towards one or other of the humanities, social sciences or natural sciences, this need not be so, and contemporary developments in learning and research are drawing these areas closer together in many cases. In the light of this fact, some account of these areas is given below, and elsewhere some examples of the kinds of programme that can be created.

COUNSELLING

In order that students may make full use of the academic resources of the Faculty they must be able to find appropriate advice and counselling when they wish to do so. This is provided by the Departments and Colleges through members of the teaching staff and Registrars who are available to discuss academic and other matters with incoming students and those already in attendance. Because of the large number of students at the University of Toronto, those wishing advice of this kind should seek it as early as possible, preferably during the winter and spring. It is important that they make appointments with the persons whom they wish to see. The appropriate names and telephone numbers are included in this book under the various department headings. The names of the College Registrars are as follows:

University College	Prof. R. M. H. Shepherd	928-3171
Victoria College	Prof. A. C. M. Ross	928-3800
Trinity College	Mr. R. L. Cummins	928-2687
St. Michael's College	Rev. H. V. Mallon	921-3151
New College	Prof. F. A. Hare	928-2463
Innis College	Mr. D. B. King	928-2511
Scarborough College	Prof. A. J. G. Patenall	284-3139
Erindale College	Prof. J. J. Rae	828-5231

It should be noted that, again because of the large number of students and the wide freedom of choice, some courses in the more popular subjects are likely to attract more students than can be accommodated if a proper standard of instruction and learning is to be maintained. Restrictions on enrolment in such courses may be unavoidable, and students are advised that the best way to meet this likelihood is to seek advice and begin their selection early rather than at the last moment.

Depending on their long range plans, students should familiarize themselves with the requirements of such places as graduate schools, professional faculties, and Colleges of Education when planning their undergraduate programme.

THE HUMANITIES

In general, the Humanities are concerned with the historical development and contemporary aspects of human experience. They examine and evaluate the ever-present relations of man to man, man to society, man to God, and man to himself. Specifically, different disciplines within the Humanities deal with language and culture, with intellectual, political, social, economic, religious and cultural history, and with the arts; in each of these areas there is a concern with man's powers of making and using concepts, and of reflecting on his own nature and condition.

In many cases, humanistic interests overlap the interests of the social scientist, who is dealing with the same phenomena from a different point of view and by other methods. The natural sciences, while their materials and methods are clearly distinguishable from those of the Humanities, also have an intimate bearing on humanistic problems. To attain a broad awareness of the human condition, including such vital matters as the determination of solutions and the formation of policies, the student who wishes to choose a majority of courses in the Humanities would be wise to select some courses in the Social and Natural Sciences.

The disciplines generally considered, at the University of Toronto, to fall within the Humanities include Classical Studies, East Asian Studies, English, Fine Art, French, German, History, Islamic Studies, Italian and Hispanic Studies, Religious Studies, and Slavic Languages and Literatures. (Students should realize, however, that some of these disciplines, such as History, Linguistics, and studies of particular areas and cultures, can also be considered as Social Sciences, and that Mathematics has traditionally been regarded as an integral part of humanistic education.)

As indicated above, each of the disciplines mentioned offers a programme for students desiring to specialize. The curriculum offers wide opportunities, also, to those who wish to concentrate their studies, but who either have not yet decided to specialize, or do not wish to specialize.

THE SOCIAL SCIENCES

The Social Sciences are defined by their subject matter and by their methods. Their basic subject is the interaction of human beings in association with one another; their basic methods are an-

alytic and descriptive attempts to understand and predict behaviour. Individual disciplines range widely from historical studies of civilizations, through comparative analyses of societies, to specific examinations of small groups in particular situations. The relation of man to his environment is integral to many subjects; consequently social scientists are concerned with such matters as urban life, communications, ecology, and national resources, to name but a few. In these cases and many others, there are close connections among the Social Sciences, the Natural Sciences and Mathematics, and the Humanities: for instance, a student interested in the economic aspects of ecology will find biological studies essential to full understanding of the problems; a student of communications from a sociological viewpoint will benefit from a study of language and linguistics; a student working towards a complete picture of national resources policy will need to be aware of scientific disciplines. In defining his special interest, then, each student should examine the related areas, both within and without the Social Sciences, and seek counselling in choosing his programme.

The disciplines generally considered at the University of Toronto to fall within the Social Sciences include Anthropology, Geography, Political Economy (comprising Commerce, Economics, and Political Science), Psychology, and Sociology. As indicated above, however, many other disciplines are closely related. There are obvious links in content and approach with such subjects in the Humanities as History, Philosophy, Linguistics, Religious Studies, with those disciplines dealing with the culture of civilizations, such as East Asian Studies, and Islamic Studies, and with the language departments. On the other hand, there are equally obvious links with Mathematics and Computer Science, which supply essential methodological tools, and with the Natural Sciences (certain investigations in Psychology, for example, overlapping those in Biology). It should be noted that programmes in Psychology and in physical Geography can qualify for the B.Sc. degree.

THE NATURAL SCIENCES AND MATHEMATICS

Science, the study of natural phenomena, embraces a wide range of subjects that form a continuous spectrum spreading from Mathematics, Physics, and Astronomy, through Chemistry and Biochemistry, to the Biological or Life Sciences. The science departments of the Faculty offer courses in almost every band of this broad spectrum; these are designed not only for those students who seek to specialize in a particular science or group of sciences, but also for those students who are interested in a less intensive study of a wider range of sciences, and for those whose primary interests lie in the Humanities and Social Sciences. For each of these groups there is opportunity to discover what excites the specialist to follow a scientific discipline, what part science plays in the contemporary world, how it contributes to our welfare and modes of living and thinking, and what problems it raises and attempts to solve for this and succeeding generations.

The student who seeks a broad programme of many sciences, or who wishes to specialize in a single one or in an interdisciplinary combination, should be aware of the interdependence of the sciences. All use Mathematics as an indispensable tool in developing logical frameworks of understanding from experimental facts, and in devising experimental tests of hypotheses. The specialists in Physics, Astronomy, and Physical Chemistry will require a greater breadth of competence in Mathematics than will specialists in the Biological or Life Sciences, but in these latter areas there are exciting opportunities for the application of Mathematics to such fields as Ecology. A glance at the section on Programmes of Study will show how Mathematics can be combined with other sciences; all such combinations are active fields of discovery today. Even in the most intensely mathematical of the sciences, it should be noted, there are differences of degree, depending on the student's inclination to theoretical or experimental aspects; certainly the student aiming at theory should take as much Mathematics as possible, without neglecting, of course, the basic science to which he wishes to apply mathematical skills.

Geology and the Life Sciences are regarded as "derivative sciences," in that their investigations of the earth and the organisms on it are built on a basic foundation of Mathematics, Physics, and Chemistry. Preparation for these fields should begin, therefore, with a programme that includes Calculus, Chemistry, and Physics; those interested in the Life Sciences (i.e., Biochemistry, Biology, Botany, Microbiology, Physiology, and Zoology) should add BIO 100 or 120. Such a broad first-year programme will grant the student entry into science programmes of all degrees of speciality or generality in the Second Year.

Students seeking a one- or two-year preparation for professional work in other Faculties such as Dentistry or Medicine are advised to consult those Faculties as to their requirements.

Students who do not seek to specialize intensively may combine many science courses in various ways to suit their interests, both with reference to the subject matter and the depth to which it is probed. Those intending to take a majority of courses in the Sciences should note that without Mathematics A in Grade 13 their choice is severely limited.

ANTHROPOLOGY

Acting Chairman of Department: Professor R. W. Dunning
Undergraduate Secretary: Professor R. B. Drewitt

Departmental Office: 928-3295

Anthropology, in the most general sense, is concerned with man's development throughout the world. Within the spectrum of the social sciences, Anthropology tends to focus on human societies that have not been or are just beginning to be influenced, directly or indirectly, by industrialism. This very broad interest has led to the division of the discipline into distinctive areas of research.

ARCHAEOLOGY

Archaeology is the study of surviving changes in the material world that are the result of the action of man. Archaeologists excavate sites, found by survey techniques, that contain remains of human activity. From the materials uncovered, classes of artifacts are established, based on analysis of form and function. The spatial and temporal relations of artifacts from a number of sites are studied. From such studies archaeologists draw conclusions about the nature of social groups, adaptations to environment, and spatial and temporal relations of the groups involved. Two important features of archaeological work are the careful observation of stratigraphy uncovered in excavation and the increasing use of highly accurate dating techniques based on physical, chemical and biological characteristics of materials found. General topics include: the origins and dispersal of early tool traditions; adaptations to cold conditions in the Ice Age; the peopling of the New World; the development of agriculture and of civilizations in the Old and New Worlds.

LINGUISTIC ANTHROPOLOGY

Linguistics is the scientific study of language. In anthropological linguistics certain aspects of language study are emphasized. One important aspect is the relation of language to culture. Here language is studied as the primary means of communication in human life. In and through language members of a community interact, and the cultural facts of a society are manifested. It plays a critical role in the transmission of culture through time.

Another important aspect of Anthropological Linguistics is language classification. Typological classification deals with the grouping of languages according to their structural characteristics. Comparative-historical classification groups languages which have evolved from a common origin (such as French, Spanish, and Roumanian from earlier Latin). Dialectology deals with the variation of language over an area. Such studies are valuable for the light they shed on pre-history. As anthropologists are often interested in the lesser known peoples of the world, linguistic field methods have come to provide techniques for the analysis of languages which have not previously been studied.

PHYSICAL ANTHROPOLOGY

Physical Anthropology and human biology are concerned with the study of the biological evolution of man and the spectrum of human variability seen in living populations of mankind. To study the evolution of man, one studies the evolution of his primate relatives, as well as the fossil remains of earlier human populations. The study of living populations, or races of people, is accomplished

through measurements of various kinds, e.g., of body proportions, of the colour of hair, eyes and skin, of blood group frequencies, and the analysis of these data. Statistical techniques are used to assess the biological affinities of populations, and to help in tracing their migrations. Basic to the study of Physical Anthropology is an understanding of the laws of human genetics, and an understanding of man's ecological background. Some basic concepts of the subject are natural selection and human adaptation, forces that have operated during the course of some two million years of human evolution to produce the polytypic species that is mankind today.

SOCIAL AND CULTURAL ANTHROPOLOGY

Social Anthropology is the study of the social life of man. Traditionally social anthropologists have used small scale societies, usually non-literate and isolated groups because it was easier to observe the total social life of a society. The range of topics includes political, economic and ritual behaviour as well as social sanctions including gossip. Although this model of social as opposed to individual behaviour was developed in small-scale societies, it is by no means limited to them. Recently Social Anthropology has become interested in society in general. The discipline is utilized in modern western society for the study of ethnic minorities and other units such as in factories, street-corner cliques, and political factions. The method is relevant for social analysis where the depth and intensity of small group interaction is part of the general social process. Moreover, institutions and models of social behaviour can be compared cross-culturally to establish more general concepts and trends.

Careers in Anthropology usually emphasize either theoretical, academic aspects, or practical applications of the discipline. Researchers in Anthropology are generally connected with a university or museum. Courses in Anthropology are taught at the university or college level. Most institutions involved in teaching and research require professional anthropologists who have obtained the Ph.D. degree. Examples of the practical applications of Anthropology range from work on problems concerning the contact of groups with varied social and cultural backgrounds, to preservation of archaeological material in connection with development and expansion of regional recreation facilities. Where Anthropology is able to provide a unique contribution in practical applications, training at least to the M.A. level is required.

As a science emphasizing comparative study of social and cultural variation throughout the world, and man's biological background, Anthropology offers a unique grounding for interests and studies in the Humanities, other Social Sciences, Psychology, Biological and Medical Sciences, and Geography.

There are two courses in Anthropology offered in the First Year and five courses offered in the Second Year. There are no pre-requisites for any of these, nor is there a defined programme for a student who seeks to specialize in Anthropology in the Second Year; however some second-year courses will be pre-requisites to courses in the Third and Fourth years. For instance the Introduction to General Linguistics in the Second Year is a pre-requisite for several of the advanced courses in Anthropological Linguistics. There are similar prerequisites in the other divisions of Anthropology.

In the First and Second years, and later years as well, courses in Anthropology can be fruitfully combined with courses in a wide variety of other disciplines. A few examples should make this breadth clear. A student interested in Anthropological Linguistics would find language courses in many departments relevant. A student of Physical Anthropology could strengthen his area of interest with courses in Zoology and Anatomy. An interest in Social Anthropology could be complemented with a variety of courses in Sociology. Finally the budding archaeologist might find courses in Geology important if his main interest were early man. Because of the wide scope of Anthropology, courses cannot be narrowly prescribed. Students interested in concentrating their studies in

this field must be prepared to consult with Faculty advisers of the department to insure that they are following a programme suited to their interests.

Admission to Graduate Studies in Anthropology in this Department is possible with or without undergraduate specialization in Anthropology, although students who have not had extensive undergraduate training in Anthropology are expected to make up deficiencies; this involves at least an extra year of work at the graduate level.

ASTRONOMY

Chairman of Department: Professor D. A. MacRae
Undergraduate Secretary: Professor E. R. Seaquist

Departmental Office: 928-3150

In all of time on all the planets
Of all the galaxies in space,
What civilizations have arisen,
Looked into the night,
Seen what we see,
Asked the questions that we ask?
"Universe" (National Film Board)

The subject has sometimes been regarded as nugatory but the modern view is quite the contrary. In all ages Astronomy has been in the background of man's thought. Its ideas pervade our literature. Trade and commerce have depended on it. And now in our own day Astronomy has become, unexpectedly, a matter of everyday concern. Its breadth in space and time and its concern both with the very large and the very small make a course in Astronomy an attractive component of any programme.

Several courses are offered to suit persons of diverse background and depth of interest. Two of the beginning courses do not require special knowledge of mathematics or the sciences. We are not concerned with formulae and detailed calculations, but rather with what the student can see with his unaided eye or with a telescope. Astronomical phenomena can be related to occurrences on earth and explained by familiar laws of physics. Extreme conditions, though unusual, need not be mysterious.

AST 100 is presented in such a way that students can learn about the universe we dwell in even though they do not have a scientific bent. It can profitably be taken in either First or Second Year since no other courses are prerequisites. The course is largely descriptive and covers the full range of astronomical topics. AST 200F is a half-course also designed for those students whose principal interests are non-scientific. It caters to the needs of students in the second or higher years whose programme in other areas requires them to limit themselves to a half-course. Given in the first term only, the lectures attempt to present up-to-date topics and to answer often-asked questions.

A third course is AST 220 offered in Second Year. It is designed especially for someone who is attracted to science and who has taken, in his First Year, one of the first-year Physics courses. This will enable him to gain a deeper insight into the physical nature of astronomical bodies and a greater appreciation of the unusual conditions which are revealed when we study them. The tools and methods used by the astronomer are also better understood. His knowledge of Astronomy will be useful in later studies of Physics, the Geosciences and even Life Sciences.

In all three courses it is an objective to provide for personal involvement by the student. Primarily this is done by the use of telescopes on the roof-top observatory of the McLennan Physical Labora-

tories, by day as well as by night. A visit to the David Dunlap Observatory is also arranged. The McLaughlin Planetarium is one of the best ways in which concepts can be presented in a realistic fashion. Motion pictures, slides and demonstrations are used extensively.

Public interest in Astronomy is increasing and for those who are planning a career in teaching it is becoming more and more necessary to be familiar with this area of science. The universe has always excited the imagination of students in elementary schools. Now, Astronomy is receiving more emphasis at the secondary school level than it did only a few years ago. In fact, a number of courses in Astronomy are accepted by The College of Education as giving credit for Physics towards the entrance requirements for a teaching certificate programme at the College. Students should consult The College of Education for details.

For those students who feel that they might follow a career in Astronomy and Astrophysics or a related discipline, a specialist programme in Astronomy has been prepared in consultation with the Department of Physics. The programme is identical to the Physics Specialist Programme in the Second Year, and is followed in the Third and Fourth years by four courses in Astronomy (of which two are half-courses) and certain courses in Physics and Mathematics. There is room for optional courses in related disciplines such as Chemistry or Geology. The aim of the Astronomy Specialist Programme is to provide for the student a proper balance between Astronomy and the other physical sciences which play important roles in astronomical research.

BOTANY

Chairman of Department: Professor N. P. Badenhuizen
Undergraduate Secretary: Professor E. R. Luck-Allen

Departmental Office: 928-3537

Botany has been regarded traditionally as the biological science that is solely concerned with the study of the plant kingdom. Modern Botany, however, is concerned with the broader field of the nature of life, and deals with fundamental biological processes, whether common to all living things or peculiar to plants. It both contributes to and uses Biochemistry and Biophysics in studies of life processes at the molecular level. It is also concerned with the integration of physical and chemical processes in the structure, function, organization and development of cells and whole plants, as well as biological communities. It includes plant life in all its forms: seed-bearing plants, ferns, mosses, algae, fungi, bacteria, viruses; and it deals with all aspects of their life as individuals and in relation to the environment.

Better knowledge of plants is of the utmost importance in efforts to solve urgent problems facing mankind, such as the production of enough food, and protection against pollution of air and water. Man's food and shelter, the oxygen he breathes, the condition of his environment and the fate of his civilization depend on maintaining a proper balance in the plant cover of the earth. The efforts of botanists are therefore of the greatest importance to the welfare of mankind.

Careers for botanists are mainly in teaching and research. These aspects may be combined in universities, or pursued separately, the one in schools, the other in government institutions of museums, in connection with various botanical fields such as Agriculture, Horticulture, Forestry, Conservation, Plant Breeding, and others.

Botany courses can play a significant role in a wide variety of programmes of study. They can be combined with courses in Zoology in various proportions to provide programmes in Biology. Those who seek to teach Biology in the secondary schools should select such a programme, balanced according to the requirements of The College of Education for entrance to its various teaching-certificate programmes. More general programmes can be devised including Botany either to ob-

tain an overall knowledge of several fields, or to provide a background for environmental studies. Combinations with Chemistry can lead to specialization in Biochemistry, Microbiology, Food Chemistry or Chemotaxonomy. Combinations with Physics opens the study of Biophysical problems, such as ion or water transport in plants, photosynthesis, and many others. With Geology it may be applied to the use of plants as indicators of elements in the earth crust, or of fossil plants to identify geological strata.

The main areas of specialization in Botany are: plant relationships (Systematic Botany, Biosystematics, Cytotaxonomy) and distribution (Phytogeography), structure and evolution (Anatomy and Morphology), function and development (Physiology), ultrastructure in relation to function (Cell Biology) or to hereditary problems (Cytology, Cytogenetics), plant diseases (Pathology, Virology), the interrelationships of plants and the environment (Ecology), the study of fungi (Mycology) or of algae (Phycology).

Because of the great variety of possible combinations in Biology, prerequisites are kept to a minimum, but students are strongly advised to follow the recommendations made by the Department. The Department should also be consulted if the student wishes to follow a programme toward any particular area of specialization.

Admission to graduate studies in a botanical field will be based on the successful completion of a specialist programme in Botany. The backgrounds of other applicants for graduate work will be evaluated on an individual basis.

A student who wants to specialize in Botany should lay a foundation of knowledge of the Biological and Physical Sciences by selecting in the First Year BIO 100 or 120, (or BOT 100), CHM 120, MAT 130 or 135, and PHY 130 or 140. A training in Mathematics is essential for the solution of a number of biological problems. In the 200 series BOT 210 (Morphology and Evolution) and BOT 240 (Introductory Cell Biology), as well as CHM 235, are regarded as fundamental to any further specialization in Botany. Further selection can be made from other Botany and Zoology courses, MBL 220, PHY 230.

In the 300 series the following courses in Botany are regarded as fundamental: BOT 300 (Systematics), 320/321 (Physiology), 330 (Ecology) and 341 (Cytogenetics). They provide for a broad botanical background, but each will lead to an area of specialization. Further choices may include: other Botany or Zoology courses, BCH 320/321, MBL 300, STA 232 or 242. The 400 series offers a choice of special courses in various fields.

Entrance to a Type A certificate programme in Biology at the College of Education, at present requires: a total of 20 courses (or 60 credits) after Grade XIII, of which at least eight courses must be in Biology (Botany and Zoology), one in Calculus and five in Chemistry, Physics and Mathematics. For a Type A certificate in Science, in which Biology is chosen as one of the subjects, at least five courses are required in Biology, with the other nine distributed over the Physical Sciences and Calculus.

CHEMISTRY

Acting Chairman of Department: Professor A. G. Brook
Undergraduate Secretary: Mrs. M. E. Brereton

Departmental Office: 928-6033 and 3604

Chemistry is both a challenging intellectual pursuit and a dominant force in shaping our modern civilization. Modern Chemistry places a strong emphasis on an understanding of the structures and properties of individual atoms and molecules and on using this understanding to interpret and predict the behaviour of matter. Many of the concepts of Physics and the methods of Mathematics are

basic to Chemistry. Chemistry is, in turn, of fundamental importance to many other subjects ranging from the biological and medical sciences to Geology, Metallurgy, and Astrophysics. These and other aspects of the subject are reflected in the courses offered and the programmes recommended by the Department of Chemistry.

The basic course offered in First Year is CHM 120 and it should be chosen by all those who wish to continue the study of Chemistry in a later year or who require Chemistry as preparation for another science. Grade XIII Mathematics A and Chemistry are the normal prerequisites for this course, although students who lack Grade XIII Chemistry may enroll provided they take a special 2 hour per week tutorial during the fall term. This special tutorial will cover the Grade XIII material essential for an understanding of the content of CHM 120. (Students intending to enroll in CHM 120 without Grade XIII preparation are advised to consult the Department at the earliest possible opportunity so that a suitable reading programme may be arranged prior to commencement of lectures). In addition to these special tutorials, regular weekly tutorials will be given at different levels to take account of different interests and aptitudes. Students may choose either a tutorial which gives a discussion of problems arising from the lectures and laboratories or a tutorial which provides a deeper consideration of theoretical, mathematical, or chemical aspects of the subject. There will be one afternoon (4 hours) of laboratory every second week.

A second course, CHM 100, is specially designed for nonscientists. It seeks to give an insight into the scientific methods from a chemical viewpoint. This course is not an equivalent to Grade XIII Chemistry nor does it serve as a prerequisite for any other Chemistry course. There are no prerequisites and it may be taken in any year, with the result that it can form part of a sequence with similar courses in the other sciences to give a non-scientist an insight into the ideas and methods of science.

Chemistry courses normally offered in the Second Year are CHM 220 and CHM 235. The latter course combines organic and inorganic chemistry in a unified approach, treating structure and bonding in some detail. CHM 220 considers some of the more physical aspects of Chemistry and is more mathematical. Students wishing a firm background in Chemistry but who wish to take only one Chemistry course a year should postpone CHM 220 until Third Year. Other advanced courses (normally 300 series) may be taken if prerequisite conditions have been met.

Details of specialist programmes recommended by the Department are presented elsewhere in this Calendar. These programmes, Chemistry, Chemistry (with Physics), Chemical Physics, and Chemistry and Mathematics have been designed to provide the student with an integrated series of courses which, over the four years, will provide a sound background in the areas indicated by the programme titles. Students are free to deviate from these programmes and, indeed, to devise new interdisciplinary programmes; however, prior consultation with the departments concerned is urged. All the programmes listed are suitable training for those wishing to enter science-based industry, to continue into graduate work and, with certain limitations, to teach Chemistry in secondary schools (Type A Certificate). The present requirements for a Type A Certificate to teach Chemistry require a minimum of 14 courses in mathematics and science with at least 8 courses being in Chemistry. A graduate degree is essential for teaching at the college or univertisy level and is virtually essential for a research career.

The Chemistry Programme provides a basic core of Chemistry, with the necessary ancillary Mathematics and Physics, in the first three years, leaving the Fourth Year free for the student to choose courses reflecting his specific area of interest. This programme is suitable for entry into graduate work in any area of Chemistry.

The Chemistry (with Physics) Programme is similar to the Chemistry Programme but offers more opportunity for the study of Physics and is therefore particularly suitable for those students interested in the more physical areas of Chemistry. This programme is suitable for those who wish to continue into graduate work, particularly in Physical Chemistry, although preparation for graduate work in other areas is readily achieved through the choice of options in the final two years.

The Chemical Physics Programme is an interdisciplinary programme designed particularly for those whose interests lie in the large area of science where these two subjects overlap. This programme is particularly suitable for graduate work in certain areas of Physical Chemistry and in Molecular Physics. Entry into research in other areas of Chemistry is difficult but can be achieved if care is taken in the choice of options in the final two years. Similarly, a careful choice of options will be necessary if a type A teaching certificate is desired.

The interdisciplinary programme in Chemistry and Mathematics is highly challenging and should be attempted only by outstanding students. It is designed particularly for those intending to do graduate work in Theoretical Chemistry or Applied Mathematics and a well-rounded training in either may be obtained by a careful choice of options, particularly in the higher years.

Examination of the specialist programmes will show that they differ only slightly in the first two years. For example a choice of CHM 120, PHY 120 and MAT 139 in First Year will permit entry into the Second Year of all but the Chemistry and Mathematics Programme. The second year programmes also differ only slightly and transfer between programmes at the beginning of Third Year will, in general, be possible. It should also be pointed out that, regardless of the programme chosen, a student wishing a balanced training in Chemistry should take each of CHM 320, 330 and 340. In addition, as the computer is playing an increasingly important role in all areas of Chemistry, a half-course in Computer Programming is recommended as part of any chemist's training.

CLASSICAL STUDIES

Chairmen of Departments of Classics:

University College:	Professor G. V. Sumner
Victoria College:	Professor D. O. Robson
Trinity College:	Professor D. J. Conacher
St. Michael's College:	Professor the Reverend J. J. Sheridan

Enquiries: 924-2121

Classical Studies are concerned with the linguistics, literature, philosophy and history of Greece and Rome. For the linguist, Greek and Latin lay a solid foundation for the study of the Indo-European languages ancient and modern: Sanskrit, Persian, Armenian, Teutonic, Slavonic, Lithuanian and Celtic. Students and lovers of literature are introduced to early and often unsurpassed works in every *genre* which have contributed form, content, and critical standards to every European literature. The philosopher encounters the seminal ideas of European philosophy clearly and simply expressed. The political scientist observes a people, passionately interested in both the theory and practice of politics, who explored the possibilities of elitist governing groups, enlightened and unenlightened despotism, and democracy, singly and in a variety of combinations, in national, federal and imperial contexts, and on every scale from city state to "world empire". Students of religion discover a rich variety of religious experience, interesting in itself and for its formative influence upon Christianity and Islam. The historian, with an entire civilization before him from beginning to end, can compare it with his own, and can trace the evolution of a single great social experiment from its first creative phase, through its mature achievement, to its final period of consolidation—and obsolescence. Classical language, literature, philosophy, political experience, religion, law, art, architecture, and Euclidean mathematics are still factors in our lives, and our understanding of the present will be enhanced by some understanding of these formative influences from the past.

The Department has devised programmes for students who seek to specialize in Classics, Greek, Latin, and in Greek and Roman History, beginning in the Second Year. One first-year course in

Greek, and one in Latin, are sufficient to admit a student to any of these programmes. The Programme in Classics will consist of two courses a year in Greek, and two in Latin, with the possibility in the upper years of concentrating upon any two of literature, history or philosophy. The Programme in Greek will consist of three courses in Greek, and one in Latin, in each year. The Programme in Latin will consist of three courses in Latin, and one in Greek, in each year. The Programme in Greek and Roman History will require two courses each year in that subject, together with six unspecified courses in Greek and Latin (at least one in each language to be completed by the end of the Third Year) to ensure to the specialist in this field a grasp of his linguistic tools. Graduates of these programmes will generally teach in schools and universities, but many have found in their classical training an excellent background for careers in Church, Law, the other professions, and business. It is anticipated that these programmes will lead to Type A certificate programmes at The College of Education, and will admit graduates to schools of graduate studies here and abroad.

Students who do not seek to specialize in any of these fields may take any course in the Department for which they have the stated prerequisite. It will be appreciated that advanced work in Greek and Latin can only safely be undertaken by those who have studied those languages in previous years. But an effort has been made to limit prerequisites and to broaden choice. Courses in Greek and Roman History and Classics in Translation have no prerequisites, and for the most part any course can be taken in any year.

Any student can combine the study of Greek, Latin, Greek and Roman History and Classics in Translation with a variety of other disciplines. The Department will demand no more than one first-year prerequisite for any programme administered by the Department of Classics jointly with another department representing specialization in more than one discipline. Students of medieval and modern languages and literatures, of the ancient and contemporary civilizations of Asia, of Anthropology, Fine Art, Philosophy, History, Religion, Sciences and Mathematics can find in the study of Greece and Roman material relevant to their several interests.

Whether the student approaches the Classics in the original languages or in translation, he will have been introduced to intelligent people *of another society* faced with, and trying to meet, basic and universal issues. He will have a better sense of what these issues are, and of possible responses to them. His study of Classical civilization will have given him new questions to ask of his own society, and a broader feeling for possibilities in present and future.

EAST ASIAN STUDIES

Chairman of Department: Professor A. K. Warder
Undergraduate Secretary: Professor D. B. Waterhouse

Departmental Office: 928-3301

East Asian Studies in the University of Toronto is a branch of the humanities, devoted to the study of the civilizations of India, China, and Japan. Its aim is to understand the cultural heritage of three ancient and still extremely vital peoples. While they have evolved independently of Western culture, today Eastern and Western traditions are flowing together into a single world civilization. The future of this world civilization may be as rich as the sum of all its component traditions, plus the new impetus which can arise through their interaction. Our insecure and suicidal world needs all the wisdom it can command if it is to have any future worth contemplating; the realization of this need explains the contemporary interest in the heritage of Asia. Some people point out, quite rightly, that if the West is to co-exist with the East we must understand each other by learning each other's languages and studying each other's cultures. But a more positive approach should

be urged: we may learn interesting and useful things from each other, enriching our common heritage, whilst we learn about each other as a matter of mere practical necessity. Asian literature, for example is interesting as literature, especially in the light of Asian literary criticism, it is not just an exotic curiosity.

The offerings of the Department of East Asian Studies parallel those of a language and literature department like, say, French since the main programmes are structured in the same way as those of such departments. They are in a sense wider, however, like Classics since the same Department offers complementary courses in the philosophy, history and, to some extent, the art of the countries studied.

The discipline of East Asian Studies is a complex of Linguistic study, Literature, Philosophy, History and Art. Competence in the relevant languages is basic and our three programmes (each of which allows students to emphasize the Literature, Philosophy or History of the area) are therefore centred on Sanskrit for Indian Civilization (this being the language of most of the important literature; Hindi and Pali also are offered), classical and modern Chinese for the Chinese Studies Programme and classical and modern Japanese for the Japanese Studies Programme. Any student considering the possibility of preparing for advanced work in Asian Philosophy, History or Literature, should take the relevant language course in the First Year. For Philosophy there are introductory courses in the Second Year, without language prerequisite. It is suggested that students interested in Asian Philosophy take PHL 100 in their First Year by way of preparation. For History there are, similarly, broad courses without language requirement in the first two years, and advanced courses with study of original sources in the later years. There are also introductory courses of literature in translation, distinct from the readings in the original that form part of the language courses and advanced literature courses. Detailed outlines of these programmes are provided in the section on programmes.

There are numerous possibilities for combining courses in East Asian Studies, including those providing language study, with courses in other departments in order to form programmes of study that emphasize different fields and satisfy different interests; courses in Philosophy, Linguistics, or another language and literature are of particular interest in this regard. A programme that includes courses in Philosophy taken concurrently with courses in Sanskrit and in Indian Philosophy enables the student to study Indian Philosophy in relation to the concepts of Western Philosophy.

ENGLISH

Chairman of Departments

University College:	Professor J. J. Carroll
Victoria College:	Professor F. D. Hoeniger
Trinity College:	Professor M. T. Wilson
St. Michael's College:	Professor R. J. Schoeck

Enquiries: 928-3917

The study of English attempts to engage the mind, imagination and sensibility of the student in the literature of the English-speaking world, and in related literatures, both classical and modern. The sequence of English literature, form its beginnings (about the seventh century) to the present, constitutes a continuous tradition that reflects the vitality of an entire civilization—its political, social, religious, scientific, and cultural life—and, in addition, presents a permanent record of the ways in which the human mind and imagination have responded to recurrent problems and situations. At the same time, each age gives rise to its own peculiar problems. The literature of the past and the literature of our own day can cast light upon the present and indeed upon the future. Liter-

ary studies can provide us with a fuller knowledge of ourselves and our world and with deeper insight into the nature of human experience.

More particularly, the undergraduate study of English in this University prepares the student for more advanced work in the discipline, appropriate standing in the English Language and Literature Programme qualifying the student, unconditionally, for graduate study in accredited universities of this country, of the United States and of the United Kingdom. In addition, it prepares its students for a Type A certificate programme for secondary-school teachers, particulars of which can be obtained from The College of Education, for work in journalism and in the publishing field, and for positions in business and in various departments of government.

Students who seek to specialize in English may enrol in the English Language and Literature Programme in Second Year. This structured programme contains a series of core courses that are required, together with a number of options. For details of the Specialist Programme in English, see below.

Combined programmes will be provided in collaboration with other departments in such fields as English and an ancient or other modern language, English and History, English and Philosophy, English and Psychology, English and Mathematics. Students should consult the departments concerned for advice as to appropriate course combinations. Students who seek double certification in English and one other subject are required to achieve at least B-standing in a core programme of at least seven English courses. For details of the core programme, see below. Appropriate standing in such combined programmes provides qualification for double certification in Type A programmes of The College of Education.

Students who seek the opportunity either of acquiring a breadth of experience in a wide variety of disciplines (for example, ancient and modern languages, social sciences, physical sciences, etc.) or of focusing their studies upon two, three or more subjects (for example, English and History, or English and History and Sociology; English and Slavic Studies, or English and Slavic Studies and Philosophy, etc.) can devise many different programmes of study to suit their needs. English is a very appropriate subject for inclusion in such programmes, not only because the student has the opportunity to improve his writing skills in the essay work that each English course requires, but also because he is introduced to a humanistic approach to the civilization that is part of the Canadian heritage. The student in such more general programmes can select courses to suit his needs; he can of course elect only an occasional course in English; on the other hand he can, without entering the Programme in English Language and Literature, choose a larger number. By careful choice, such students, while continuing their studies in other disciplines, can qualify for entry to programmes for Type B certification, Intermediary Endorsement or even Type A certification in either one or two subjects at The College of Education. Students should consult The College of Education for details regarding the requirements for entrance to the various programmes of the College.

Students who achieve at least B standing in the English Language and Literature Programme especially designed for the Specialist are normally admitted, without condition, to Graduate Studies in English in this University. This is generally true of students applying for admission to graduate studies in English in other Canadian universities, in the United States and in the United Kingdom. Applications for admission to Graduate Programmes made by students who have chosen not to enrol in the Specialist Programme will normally be evaluated on the strength of the distribution of courses and of standing in the programmes followed. Conditions in certain courses at the undergraduate level may be imposed.

FINE ART

Chairman of Department: Professor G. S. Vickers
Undergraduate Secretaries: Professor F. E. Winter, Miss Marion Walker

Enquiries: 928-3289

Studies in Fine Art at the University of Toronto attempt to define the role of the visual arts in the development of man. The methods used are both historical and, through the use of studio courses, experimental and creative. The courses survey all periods from the Bronze Age to the present in the Mediterranean area, Europe and North America. The student may extend his enquiry to the arts of the Islamic and East Asian civilizations and the aboriginal peoples in courses given by other departments. The scope and variety of available courses will prepare the student for the role of teacher, and museum curator, though a further stage of professional training is required for both educational and museum work. Because the modern world has become keenly aware of the visual arts as an area of communication, there is, especially in Canada, a demand for trained guidance which exceeds the supply.

Generally, the evidence provided by the Fine Arts enriches the understanding of other disciplines approached by the historical method. The History of Art can be related to the courses taught in the Department of History. It is one aspect of cultural history examined in the studies of literature in several language departments. To those interested in Music, the Fine Arts is a sister discipline. A combination of Fine Art courses and Philosophy can improve the grasp of those interested in aesthetics. Combinations listed in this paragraph are to be encouraged, as they provide a substantial basis for a continuation of an educational programme especially at the graduate school level.

To insure a reasonable control of the material for later professional use, the programme which represents specialization in Fine Art requires a minimum of ten full courses. Two separate fields of specialization have been designated, one in the History of Art, the other in Studio. For the first, there must be at least ten courses in the History of Art. For specialization in Studio, at least six studio and four history of art courses must be taken.

For specialization in History of Art the student should choose, in addition to the basic courses FAR 100, 101, 102, 200, 201, at least five advanced courses, including at least one from each of the Ancient, Mediaeval, Renaissance-Baroque, and Modern areas. Those who are particularly interested in Ancient art, however, should concentrate their basic and advanced courses mainly in that area, including courses offered by the Classical Studies and Near Eastern Studies Departments.

The Department of Fine Art requires no prerequisite at the secondary school level for courses in the History of Art; but for admission to FAR 110 the applicant must present evidence of interest and ability in the form of a portfolio. Within the New Programme the four basic courses, FAR 101, 102, 200, 201 are sufficient for admission to all other courses. Because the History of Art is taught in chronological sequence, the lack of knowledge of what has gone before can prove an impediment to proper study and normally should be avoided. In the Third and Fourth Years language prerequisites are listed because much of the reading material in Fine Art is available only in French, Italian and German. For this reason, it is wise to include (from the First Year) basic language courses among the choices.

To gain sufficient credits for the Type A certificate at The College of Education it is recommended that the student take the Studio Programme to the maximum offered, plus FAR 101, 102, 200, and 201. To make up the remainder of the required specialty credits at least four further history of art courses are required; for purposes of this calculation the course in Aboriginal art in Anthropology and offerings in the History of Art in the Near Eastern, East Asian, and Islamic Studies Departments may be counted.

For the student considering a career as an artist, the Studio Programme is designed to assess his

potential, acquaint him with the possibilities best suited to him, and prepare him on graduation to enrol in post-graduate professional training. It must be stressed that this programme is preliminary, having as its special goal to arouse in the would-be artist a critical awareness of his own environment. He would profitably choose introductory courses in the Social Sciences, Philosophy and the other modes of modern expression—music and the literatures. It does not provide technical competence to the level of that of a trained artist.

FRENCH

Chairman of the Combined Departments: Professor D. W. Smith (Victoria College)

Chairmen of College Departments:

University College:	Professor P. R. Robert
Victoria College:	Professor A. R. Harden
Trinity College:	Professor W. S. Rogers
St. Michael's College:	Professor the Reverend R. B. Donovan

Enquiries: 928-3854

French studies in the University of Toronto provide varied and flexible approaches to one of the world's great languages which holds a position of unique importance in a Canada committed to a confident, practical and creative acceptance of bilingualism. Equipped with a sure knowledge of the language, students will be able to enjoy the riches and intellectual challenge of the literatures of France and French Canada through a wide range of imaginative courses.

The University of Toronto is happily aware of the great strides made in the last twenty years in the teaching and learning of French in the secondary schools. Our basic first-year course, French 120, assuming satisfactory completion of Grade XIII French, is principally devoted to consolidating the previous experience of students in the range of advanced studies open to them. This basic course, conducted entirely in French, as are the great majority of our courses, will include intensive language practice, and much of this will involve carefully planned work in one of the language laboratories that serve students of French in all the colleges. The practical skills thus developed will find a natural outlet in the discussion and essay-writing in French which will be a part of subsequent courses. The basic course is also available in Second Year, or even later to students who are not specializing in French. On the other hand, it may be omitted in whole or in part by specially qualified students who pass a searching test, and these may proceed directly to a more advanced course.

Supplementary to the basic course, two literature courses including French and French-Canadian literature of the twentieth century will be open to first-year students. In these courses the student will be introduced to the intensive study of vital works of literature and also to the various approaches—historical, biographical, psychological, analytical, structural, sociological, etc.—any of which should be familiar alternative avenues to the appreciation of literature.

Programmes representing specialization in French may be entered in Second Year (although up to two first-year courses may count towards specialization). In the Second Year, the student may choose up to four courses drawn from the following range: (1) the main trends of French and French-Canadian literature; (2) various genres—poetry, theatre, the novel, etc.—in various periods; (3) advanced language—phonology, morphology and syntax, stylistics, etc.; (4) language practice; and (5) courses of independent study in which the student has a hand in defining his field of interest and meets in small tutorial groups for discussion and reading. All of these courses are open to students in higher years. Successful completion of two second-year courses may entitle a student to participate in the Third Year Abroad programme administered by the department.

Third-and fourth-year courses, in most cases interchangeable and open to qualified students, offer further studies in literature from the Middle Ages to our own day and other options in advanced language work, semantics, comparative stylistics, etc. Independent study courses are also provided in each of these years, as well as an ambitious series of inter-college seminars allowing greater concentration and study in depth. A course in the French cinema is also offered at this stage.

From such a wealth of courses students of widely differing tastes and needs may select satisfying programmes. Some enthusiastic specialists in French might elect to take the maximum of French courses allowed, three in the First Year and an average of four in each of the other years, but a student will be regarded as a specialist in French upon satisfactory completion of a minimum of 10 courses. Details of language, literature and French linguistics requirements may be found in the Calendar under the heading Programmes of Study. A specialist student may qualify for entrance to a Type A certificate Programme in Français at The College of Education. Many specialists in French may wish to pursue parallel studies in other languages—Latin, English, German, Italian, Spanish or Russian—so qualifying for entrance to a Type A certificate programme in two languages. Other specialists will wish to enrich their programme in French with closely related studies in Linguistics, Classics, History, Philosophy, Art, Music, etc. Specialists in other disciplines, perhaps particularly in the social sciences, will frequently find French a natural complement to their programmes. Still others who prefer a broad general programme will have the same wide choice of electives in French following the prerequisite basic course. These combinations are limited only by the student's ingenuity and the time-table.

Well-qualified students who have not completed Grade 13 but successfully demonstrate their reading ability in French may be admitted to a series of courses in which the emphasis will be on the reading of selected works in French related to a literary mode or tendency (tragedy, comedy, realism, idealism, etc.), with classes being conducted in either English or French.

Students planning to specialize in French are urged to present at least Grade XII Latin, which is necessary for a study of the history of the language and medieval literature, and is a requirement for graduate study of French. In lieu of such Grade XII Latin, a beginner's course in Latin may be taken as part of the student's programme. Students contemplating graduate work in French are asked to consult the secretary of the Graduate department for further information about requirements.

GEOGRAPHY

Chairman of Department: Professor D. P. Kerr
Undergraduate Secretary: Professor N. C. Field

Departmental Office: 928-3375

Geography at the University of Toronto emphasizes the study of the relation between man and his environment, the changing social and economic interactions of people and the spatial patterns of such physical features as climates, landforms, soils and vegetation. The study of the relation between man and his environment brings to light the manner in which man has used the physical resources of his environment in the past and is using them now; it can point to the ways in which man should use his environment in the future. These studies lead to a better understanding of such problems as air-and water-pollution and over-population that are of concern today. In Physical Geography studies are undertaken to investigate physical processes that take place on the earth and to examine their relation to man's economic and social development. In the study of Economic Geography, which is one of the most popular fields of Geography, emphasis is placed on the alloca-

tion of the uses of land, the flows of goods and people, such as migration, commuting, trade, transportation and the location of industry, both in an evolutionary and optimizing sense. Such studies are highly important to the understanding of urbanization and to regional economies.

All studies in Geography are concerned directly or indirectly with the broad theme of man and society. Each society has been affected by the physical environment in which it has lived; it has in turn changed and continues to change the environment.

Geography is an important and well-established subject in the secondary schools and there is a continuing demand for qualified teachers. Geographers are in demand at all levels of government service, in the Federal Departments of Energy, Mines and Resources (with a special demand in the Water Resources Branch), External Affairs, Trade and Commerce, Northern Affairs, Regional Development, and other branches. Many graduates of an undergraduate programme in Geography proceed to an M.Sc. degree in Urban and Regional Planning. In the world of business, graduates in Geography have attained success in marketing firms, transportation companies, and consulting agencies.

Geography is a natural component of many interdisciplinary programmes of study. For example, Geography already plays an important role in the Latin American Studies Programme and offers courses (particularly those dealing with specific regions) that would form valuable complements in programmes of study dealing with Canada, the United States, the U.S.S.R., China, or Western Europe. Physical Geography and Geomorphology have close connections with Geology, Civil Engineering and Archaeology. Studies in Climatology and Biogeography have relevance to programmes that emphasize Biology or other sciences, especially those concerned with ecological studies that form a necessary basis for investigation of all aspects of land, water and air pollution. Geography, History (particularly Economic History), and Cultural Anthropology can be combined effectively by the student interested in problems of the past such as, for example, the manner in which European patterns of land-holdings and agriculture were adapted to life in the New World by the European settlers, and how these patterns altered as the New World developed. Geography, Economics and Sociology join forces to tackle many contemporary problems such as those of urban growth, regional disparities, and resource management. Students should note that Mathematics now plays an ever-increasing role in modern Geography with the development of models permitting quantitative analysis of particular problems.

The Programme in Geography has been devised to provide the student with an integrated pattern of specialized study, the completion of which confers on the student a measure of professional status. Admission to a graduate programme in the Department of Geography at the University of Toronto normally requires upper second-class standing in the later years of this Programme. Students following different programmes are usually required to take a two-year, rather than a one-year, M.A. programme. The admission requirements to a Type A certificate programme for secondary-school teachers include at least 27 credits (9 courses) in the major field and at least 15 credits (5 courses) in related disciplines.

A student may enrol in the Geography Programme in the Second Year. This Programme requires at least nine full-courses (or the equivalent of half-courses) in Geography during the four years of the undergraduate programme. Of these nine courses, four and one-half are specified as constituting a common core for all students following the specialist programme: GGR 100 (Introductory Physical Geography); GGR 270 (Analytical Methods); GGR 320 (Philosophy of Geography); GGR 390F or 391F (Field Methods I or II); and GGR 491 (B.A. Thesis). A course in statistics offered by another department could be substituted for GGR 270 as part of the core, but should not be considered as one of the nine courses in Geography. The remaining courses in Geography may be selected from the options available in various branches of the field. Specialists in Physical Geography should include at least one course in Human Geography in their programme.

GGR 100 should be included in the second-year programme if it was not taken in First Year, and a student should complete at least three Geography courses by the end of his Second Year. A stu-

dent can enter this Programme as late as the beginning of his Third Year, but should consult the Department to determine what courses or summer assignments may be required. Enrolment in the Fourth Year of the Programme, including the B.A. Thesis, is open only to those students who will have completed nine Geography courses (including the four and one-half required courses) by the end of their Fourth Year. There is no specified limit on the maximum number of Geography courses that can be included in this Programme, but students are strongly advised to take at least one-third of their courses in other related disciplines. Faculty advisors are available for consultation as to what are appropriate course combinations to satisfy each student's particular interests.

GGR 100, 101 and 220 are available to students who enter the First Year. A student who intends to specialize in Geography and enter the Geography Programme in second year is advised to take no more than two of these courses in his first-year programme (all three are also available to second-year students), and to select the remaining courses to suit his interests. The following first-year courses are suggested for consideration, as complementary to a Geography programme: ANT 100, 150, ECO 100, SOC 101, HIS 100, FRE 120 (or another language), MAT 110 or 134 or 135, GLG 100, BIO 100 or 120, CHM 120, and PHY 130 or 140. Mathematics is strongly recommended to students interested in advanced work in Physical Geography or in the more mathematical branches of Urban and Economic Geography. Courses in the sciences are desirable for those who plan to specialize in Physical Geography.

GEOLOGY

Chairman of Department: Professor E. W. Nuffield

Departmental Office: 928-3021

Geology is the science of the earth. It includes all knowledge of the earth—its origin, history, structure, composition, and mineral wealth—and the physical, chemical, and biological processes that change the earth. A most comprehensive subject, it may be divided, for convenience, into three broad branches: Geophysics, in which modern methods of Physics are used to reveal the nature of the interior, of the outermost skin, and of the atmosphere around the earth, and to study the enormous forces that have acted and are still acting to change the earth; Geochemistry, in which experimental and analytical methods of Chemistry are used to understand the chemical processes which have given rise to the rocks, oceans, and mineral wealth of the earth; and Geobiology, which deals with the origin and evolution of living things on the earth's surface throughout geologic time. Because Geology involves the application of the fundamental sciences towards understanding the earth, its study requires a grounding in Mathematics, and in the principles and methods of Physics and Chemistry, or Biology.

Geology offers a rewarding career for both male and female students who have scientific ability and who are interested in studying the earth. A geological study begins with observations made in the field; these are then brought back to the laboratory where further observations are made, and possible explanations proposed and tested. Some geologists prefer to work exclusively in the field; others prefer to work in the laboratory; and yet again others divide their time between the field and laboratory.

Many graduate geologists enter industry, using their knowledge in the search for oil and mineral deposits. Others work for the federal and provincial surveys, where they are involved in mapping and understanding rocks on a wider scale. Still others have become involved in the search for fresh water in arid areas, in oceanography, and in the exploration for resources at the bottom of the seas. Perhaps the most exciting project in store for geologists is the investigation of rocks from the moon and planets. Because the programme in Geology is well grounded in Mathematics and basic science,

graduates are able to transfer to related disciplines, such as materials science, solid state physics, or metallurgy for additional university training or employment.

An increasing number of the more interesting positions open to geologists require graduate experience. Graduates from the programme in Geology are prepared for advanced study towards the M.Sc., and Ph.D. degrees in most fields of Geology.

The programme in Geology includes a group of courses (CHM 120, CSC 148/108, GLG 120, MAT 134/135/139, GLG 220, GLG 221Y, GLG 320, GLG 321, GLG 322) which are considered to include the basic knowledge that anyone who wishes to specialize in the study of Geology ought to have. This "core" can be completed by the end of the Third Year and accounts for eight of the fifteen courses required for standing in the Third Year. A student is able to enrich each year by choosing the remaining seven courses from a list of recommended basic science and Geology courses. By this process he can obtain a general background in Geology and then proceed to concentrate his studies, if he wishes, in one of the three broad branches of Geology in the Fourth Year.

In his First Year, the student who intends to specialize in Geology should select the core courses CHM 120, MAT 134/135/139 and CSC 148/108. GLG 120 is recommended as part of the first-year programme but can, if desired, be deferred to the Second Year. Other desirable first-year science courses are BIO 100 or 120 for students interested in the biological aspects of Geology, PHY 120 or 130 for students who intend to take a course in Geophysics, and AST 100.

In the Second Year, the programme requires GLG 220, the half-course GLG 221Y, GLG 120 if not previously taken, and a selection of three courses from BOT 210, CHM 220, CEN 617Y/CHM 235, MAT 230/234/235/239, PHY(220, 221F)/230, STA 232/242/252, ZOO 220, ZOO 250, ZOO 253. The optional courses recognize the broad scientific base of Geology and its dependence on other sciences. The student can choose an area of specialization by his selection of courses from the list. Many combinations of courses are possible but a number have special merit. A selection from BOT 220, ZOO 220, ZOO 250, ZOO 253 will be of interest to students in Geobiology (Paleontology and Stratigraphy). The courses CEN 617Y/CHM 235, CHM 220, MAT 230/234/235 lead to specialization in Geochemistry. Students who wish to combine Physics with Geology will find the courses PHY 220, PHY 221F, MAT 235/239 valuable. An attractive combination consists of CEN 617Y/CHM 235, MAT 234/235, PHY 230; it provides a less specialized background in the physical sciences than the other combinations and for this reason leads to the widest choice of geological courses in the fourth year.

The third year programme has GLG 320, 321, 322 as required courses and an option between GLG 324 and GLG 325. The optional course GLG 324 (Physical Geochemistry) is a prerequisite for the fourth year course in Mineral Deposits (GLG 421) and for advanced courses in Petrology and Geochemistry (GLG 420, 423 respectively), all of which are based in Chemistry. GLG 325 is a first course in Paleontology following on the study of Historical Geology in the second term of GLG 120. Students who intend to graduate at the end of the Third Year and students who prefer a broad rather than a specialized education should consider taking both GLG 324 and GLG 325. The department also offers a number of 300-series half courses in special subjects in Geology for enrichment of the third and fourth year programmes. It is recommended but not required, that students who plan to take Exploration Geophysics (PHY 308& 324Y) in the Fourth Year, prepare for it by including a course in Differential Equations (MAT 244F) in the third year programme.

The fourth year programme affords the student complete freedom to construct his programme from a variety of Geology and Geophysics courses, both pure and applied: GLG 420, 421, 423, 424, 425, 426, 427F, 428 and 490, GLG 470/PHY 421Y, PHY (308 & 324Y); one full or two half 300-series Geology courses, not previously taken. He may select courses in five different subjects in Geology, thereby arranging a broad education for himself or he may restrict the range of subjects and actually emphasize one course of study by undertaking a weekly period of Laboratory Research (GLG 470/PHY 421Y) in the subject. He can shape his fourth year programme to terminate his formal education with the four-year B.Sc. degree or to prepare himself for graduate work in a chosen subject.

The accompanying table shows how the optional courses in Geology and the basic sciences and Mathematics can be grouped within three programmes each of which emphasizes one of the three broad branches of Geology. Other combinations, of equal value, can be formulated.

POSSIBLE COMBINATIONS
of
BASIC SCIENCE AND GEOLOGY COURSES

Yr	CORE COURSES	LIFE SCIENCES	PHYSICAL SCIENCES	
		Paleontology & Stratigraphy	Geochemistry	Geology & Physics
I	CHM 120 CSC 148/108 GLG 120 MAT 134/135/139	AST 100 BIO 100 / 120	AST 100	AST 100 PHY 130/120
II	GLG 220, 221Y	BOT 210 ZOO 220 ZOO 250 ZOO 253	CEN 617Y/CHM 235 CHM 220 MAT 230/234/235	CEN 617Y/CHM 235 MAT 230/234/235/239 PHY 230/(220 & 221F) PHY 225F
III	GLG 320, 321, 322	GLG 325, 326Y	GLG 324, 323Y, 370Y, 371Y 372Y	GLG 324, 323Y, 372Y, MAT 244F
IV		GLG 424, 425, 426, 428, 470, 490	GLG 420, 421, 423, 427F, 470, 490	GLG 420, 421, 423, 427F, 428, 490 GLG 470/PHY 421Y PHY (308 & 324Y)

GERMAN

Chairmen of Departments:

University College: Professor H. N. Milnes
Victoria College: Professor G. W. Field
Trinity College: Professor D. A. Joyce
St. Michael's College: Professor V. Mueller-Carson

Enquiries: 928-3186

For the past two hundred years Germany, together with Austria and German-speaking Switzerland, have played increasingly important roles in European life, both as leaders in commerce and industry and as the homelands of important musicians, philosophers, scientists, psychologists, and religious and political thinkers. Their scholars are unrivalled in such fields as Biblical Studies, Mediaeval Studies, Philosophy, Archaeology, Art and Music History, and Physics and Chemistry. Modern

literature in Germany is equally distinguished. It developed late. The first great writers appeared towards the end of the eighteenth century. But from Lessing, Goethe, and Heine to Brecht and Thomas Mann they have remained vigorous and individualistic, and concerned with the widest range of human problems, philosophical and psychological, moral and religious, social and economic.

University courses in German offer a thorough study of the language and of the more important authors from the Middle Ages to modern times. Language study includes phonetics and laboratory work, oral expression, translation, and essay-writing. In the senior years students receive advanced language training and may choose from a variety of courses in literature and in the development of the language. Scholarships for study at German universities are available for graduate students, and the German government sponsors flights to Germany and summer work for undergraduates.

German may be profitably studied in combination with other languages and literatures, with Linguistics, Philosophy, or History. It is offered as an option in such programmes for specialists in English, Music, and Fine Art, and forms itself a part of programmes that specialize in languages and linguistics.

Because it is a well-established fact a young student learns languages more easily and more thoroughly than an older one, Grade XIII is the normal prerequisite for university courses in German. For departments or faculties that require a student to learn to read scholarly German, however, provision is made for appropriate instruction for beginners and for guidance in reading in specialized fields for those who already have some knowledge of the language.

The successful completion of a four-year programme, including seven approved courses in German, entitles a student to do graduate work in the Department. A knowledge of German is also a valuable asset in many other fields, including foreign service. For information concerning admission to Type A certificate courses at The College of Education the student should consult the College.

HISTORY

Chairman of Department: Professor A. P. Thornton
Undergraduate Secretary: Professor R. J. Helmstadter

Departmental Office: 928-3363

The Department of History at the University of Toronto at present consists of sixty full-time members of staff, whose professional interests range through such diversified fields of History as: British and Commonwealth, Canadian, East Asian, East European, European, Latin American, Russian and United States. In the British and the European fields the medieval as well as the modern periods are fully covered. Other fields such as Greek and Roman, Near Eastern and Islamic History are taught by other departments. We aim, in the various undergraduate courses of the Department of History, to introduce the student to as wide and as deep a range of study as is possible.

Our basic approach to instruction in these courses is to combine lectures with a small tutorial group, in which the students and the tutor can explore historical problems in depth. In upper level courses instruction may take the form of a lecture without tutorial groups, or seminars without lectures.

Students who seek to specialize in History are required to enrol with the Department in a History Programme. A Specialist Programme in History consists of a minimum of seven courses in History, not including HIS 100. The Department encourages each History Specialist to define his own interests, and considers it a matter of primary importance that he pursue an academically coherent and sensible programme of study. Through its system of advisers, the Department will assist each Specialist in choosing his History courses and his other courses in order that he might better be

able to construct a carefully integrated programme.

The Department does not require a Grade XIII prerequisite for entry into the first-year course in History. It does not require HIS 100 either for entry into the Programme for Specialists or as a prerequisite to any further History course. The Department recommends, however, that a first-year student who intends to specialize in History include HIS 100 in his programme. In this course the student is given a general introduction to the historical discipline. In his subsequent years he will develop his knowledge in the fields of his particular choice.

Students who wish to obtain a Type A Certificate must conform to the regulations laid down by The College of Education, i.e., a minimum of nine courses in History. Students who intend to follow their undergraduate education with graduate work should confer with departmental advisers regarding their programme.

ISLAMIC STUDIES

Chairman of Department: Professor R. M. Savory
Undergraduate Secretary: Mr. J. R. Blackburn

Departmental Office: 928-3307

The discipline of Islamic Studies is concerned with the total culture and civilization of the Islamic world from the advent of Islam in the 7th century A.D. up to the present day. By "Islamic world" is meant those regions where Islam is, or was, the dominant religion. It is therefore not limited to the Middle East, but includes areas as far apart as North Africa and Spain on the one hand, and China, Malaya and Indonesia on the other. Today, about 450,000,000 people call themselves Muslims. The study of Islamic civilization thus introduces the student to the culture of about one-sixth of the total population of the world.

The discipline of Islamic Studies is concerned with the study of the literature, history, religion, philosophy, thought, art and architecture of the Islamic world as defined above. Because languages are the key to the understanding of any culture, courses are offered in the principal languages of Islam: Arabic, Persian, and Turkish. In addition, Urdu is available at the graduate level. Of these, Arabic is the most important; Arabia was the birthplace of Islam, and Arabic is the language of the Qur'an, the revealed scriptures of Islam. Today, Arabic is the common language of people from Morocco to the borders of Persia, and from Syria to the Sudan. But Muslims speaking and writing Persian, Turkish or Urdu have, through the centuries, made a vital contribution to that unique cultural achievement which we call Islamic civilization.

The discipline of Islamic Studies is conceived in the broad tradition of the humanities. Its sepcial appeal is that it affords the student the opportunity of studying a non-Western civilization. No longer can the West be content to ignore, or to have only vague and prejudicious ideas about, a substantial proportion of mankind. It follows that the civilization of Islamic merits study for its own sake.

There are many careers open to students in Islamic Studies. These include: university teaching; specialist Islamic librarianship (for those qualified in both Islamic Studies and Library Science); public administration; business; high school teaching; Islamic art and archaeology (usually connected with work in museums); journalism, and bibliographical work.

At the graduate level opportunities for advanced study are also provided, and graduate students are encouraged to take courses in other departments and centres in addition to courses specifically related to Islamic Studies. Such departments and centres include the Centre for Medieval Studies, the Centre for Linguistics, the Centre for International Affairs, the Department of Philosophy, the Pontifical Institute for Medieval Studies, and the Centre for Russian and East European Studies.

There are many areas of research in which fruitful co-operation is possible between the discipline of Islamic Studies and other disciplines: for example, with Hispanic Studies, for the study of Islamic civilization in Spain; with Medieval Philosopy and Classics, for the influence of neo-Plantonism on the Muslim scholastic theologians and political philosophers, to name but one possible area; with History, for the study of those periods during which there was close contact between Islam and Christendom, for instance, the Crusades, the Mongol invasions of western Asia and eastern Europe, and the 600 years of the Ottoman Empire; and with International Affairs, for the study of political and social developments in the modern Islamic world. For the linguist, the philosopher, the historian, the social scientist, and the student of comparative literature, the interaction between the two civilizations affords stimulating comparisons. Students should have these opportunities in mind when selecting the courses in their undergraduate programmes.

The undergraduate programme for students seeking to specialize in Islamic Studies is distinguished primarily by its insistence on real competence in at least one Islamic language. A student intending to proceed to graduate work in this discipline would be urged to study a second Islamic language, but this is not mandatory. At the same time, no proper understanding of Islamic civilization can be achieved without a thorough knowledge of Islamic history. The Islamic Studies Programme, therefore, is defined as a minimum of NINE courses in Islamic Studies, of which at least three shall be language courses and three history courses. A wide variety of options is offered in each year. Students who intend to enrol in this programme are urged to contact the Undergraduate Secretary of the Department of Islamic Studies as soon as possible, and in any case not later than the end of their First Year, so that the options which best suit their interests and needs may be selected. The number of prerequisites for courses has been kept to a minimum, but the sequential nature of language teaching requires that a less advanced language course will normally be the prerequisite for a more advanced language course.

A student who has followed the Islamic Studies Programme (minimum, nine courses) will automatically be eligible for graduate work in the field provided he has satisfied the admission requirements of the School of Graduate Studies. A student who has not so specialized as an undergraduate, but seeks to do so in the graduate school, will be admitted to a graduate programme in Islamic Studies provided that (a) he satisfies the basic admission requirements of the School of Graduate Studies, and (b) he takes such additional courses as the Department may consider necessary to make good his deficiencies in any particular area.

ITALIAN AND HISPANIC STUDIES

Chairman of Department: Professor G. L. Stagg
Undergraduate Secretary: Professor M. E. Rugg

Departmental Office: 928-3357

ITALIAN

To study "Italian" is not only to acquire a language, but also to study a rich literature and a many-sided culture that have played an important, and sometimes dominant, role in western civilization. For Canadians, the Italian contribution bears a special significance, since the vast influx of Italians in recent years has brought changes in our way of life and a living presence to reinforce traditional Italian influences and, in time, to enrich the meaning of the term "Canadian".

At the University, courses are offered for beginners in the language and for students with Grade XIII standing, or equivalent, ("matriculants"), in the subject. Stress is laid on both the spoken and written language and opportunities are provided for practice in each year. In the first year, begin-

ners receive an intensive course including work in the language laboratory (ITA 100), while those with Grade XIII standing take one of the two language half-courses ITA 120Y and ITA 190Y according to their level of proficiency, either one of which is a co-requisite for ITA 121Y, an introduction to twentieth-century literature. Of the two additional courses, ITA 140, open to beginners and matriculants, discusses Italian history and thought, cultural, social and political, from unification to the present and the impact of Italy on the world of today, while ITA 141, open to beginners only, provides extra language practice, especially oral. In the Second Year, all students take a core half-course of language practice from ITA 220Y (for those with ITA 100), ITA 221Y and ITA 290Y (both for matriculants, according to their level of proficiency: ITA 290Y involves private study under supervision) and may also choose all or some of three half-courses on nineteenth and twentieth-century literature. All 300 and 400 series courses are open to third and fourth year students who have taken ITA 220Y or ITA 221Y or ITA 290Y, though ITA 321 is a co-requisite for all other literature courses in these two series. Third year students may take 400 series courses if they wish. 300 and 400 series courses offer a wide range of options in literature and language. In all years, outstanding literary works are read not only for their individual artistic value, but also to illustrate the outlook and intellectual climate of their age. Group discussions and the preparation of reports and essays are important means to this end.

In view of the presence of many native speakers among students of Italian, oral courses will be optional and will no longer appear among those giving credit (except for ITA 141): instead, such courses will be offered at varying standards for students needing them. Thus students may join the group appropriate to them irrespective of their year and change groups in accordance with their progress. Proficiency in oral work will be certified by the Department.

All students will take a written language half-course in each of the First and Second Years, but, thereafter, may do so or not according to their individual need.

With the recent marked growth of Italian in the high schools of Ontario, openings for teachers qualified in Italian and another language are increasing. At the university level, there has existed for some years in North America a shortage of faculty members in Italian. In addition, the study of Italian, as of other modern languages, may prepare students for such careers as the foreign service, publishing, journalism, and commercial or cultural relations between Canada and Italy.

Italian may be combined with other modern languages and literatures, including English; the appreciation of mutual influences will broaden the student's understanding of each. The three great Italian writers of the fourteenth century, Dante, Petrarch and Boccaccio, and the Italian Renaissance of the two following centuries, profoundly influenced other European literatures. Italian also combines naturally with Latin, and is useful in Fine Art or Music. Italian joins in programmes for students who intend a joint specialization on an equal basis with each of the other modern languages and with Latin; these require two courses in Italian and the equivalent in the other language in each of the Second, Third and Fourth years, and at least one course in each subject in the First year. They may take additional courses in Italian if they wish and if their programme permits. Such a selection of at least seven courses would qualify them for entry into graduate studies in Italian at most universities, or into a Type A programme at The College of Education. At present, Type A certificates may be gained in Italian and French, and Italian and Latin.

SPANISH

Hispanic culture offers a variety probably unrivalled by any other modern western culture. In the Middle Ages Spain was the vital point of contact between the Christian and Islamic civilizations; in its Golden Age it led the way in the exploration and settlement of the New World, and established a great empire in the process; today it is estimated that the Spanish language is the third most widely-spoken in the world.

The subject "Spanish" is mainly, but by no means exclusively, concerned with the language and literature of the Spanish-speaking peoples. Courses are offered for beginners in the language, as well as for those with Grade XIII standing or equivalent in the subject. Stress is laid on both the spoken and written language, and opportunities are provided for practice in each year. In the First Year, beginners receive an intensive course including work in the language laboratory (SPA 100), while those with Grade XIII standing read selected works of modern Spanish literature, while continuing their study of the language (SPA 120). Of the two additional courses, both open to both groups of students, one (SPA 150) provides a survey of the social, artistic and intellectual history of Spain, the other (SPA 125) investigates the history, structure and lexical content of the Spanish language.

In the Second Year a student specializing jointly in Spanish and another language takes the core half-course of language practice (SPA 220Y or 221Y), and three of the half-courses devoted to modern Spanish literature (prose, poetry and drama) (SPA 236S, 246F, 256Y) and to a survey of Spanish American civilization (SPA 280Y). Another course (SPA 225Y) will introduce the student to Spanish phonetics and phonemes. In the Third Year the core half-course (SPA 320Y) consists of advanced language practice, and other half-courses are offered on medieval Spanish language, Spanish prose, verse and drama of the Golden Age, and Spanish American Modernista verse, twentieth-century novel and essay. In the Fourth Year a core half-course of advanced language practice (SPA 420Y) is supplemented by half-courses on medieval Spanish literature, history of the Spanish language, modern Spanish drama, verse and prose as well as on Spanish American colonial literature, drama, post-Modernista verse and the short story. In all years, outstanding literary works are read not only for their individual artistic value, but also as illustrations of the outlook and intellectual climate of their age. Group discussions and the preparation of reports and essays are important means to this end.

SPA 100 or 120 are prerequisites for second-year courses, SPA 220Y or 221Y for SPA 320Y, and 320Y for SPA 420Y. All 300 and 400 series courses (except SPA 420Y) may be taken by any student with the prerequisite SPA 220Y or 221Y, subject to the approval of the Department. SPA 100 or 120 are co-requisites for SPA 125, SPA 220Y or 221Y for any other 200 series courses, SPA 320Y or 420Y for any other 300 or 400 series course.

Opportunities for qualified teachers of Spanish and another language exist in the high schools of Ontario. At the university level, numerous opportunities exist for teachers of Spanish language and literature. In addition, the study of Spanish, as of other modern languages, may prepare students for such careers as the foreign service, publishing, journalism, and commercial and cultural relations between Canada and Spanish-speaking countries. The development of closer relations between Canada and Latin America will extend the range of available opportunities.

Spanish may be combined with other modern languages and literatures, including English; the appreciation of mutual influences will broaden the student's understanding of each. Spanish joins in programmes for such combined specialization on an equal basis with each of the other modern languages; these require two courses in Spanish and the equivalent in the other language in each of the Second, Third and Fourth years, and at least one course in each subject in the First Year. Thus a specialist would take SPA 100 or 120 in the First Year; SPA 220Y or 221Y and either 225Y, 236S, 246F, 256Y, or 280Y in the Second Year; SPA 320Y and 420Y and two further courses in Spanish in the Third and Fourth Years. He could take further courses if he wished and if his programme permitted. Such a selection, amounting to the equivalent of seven courses, would qualify him for entry into a Type A course or Graduate Studies in Spanish. At present, Type A certificates may be gained in English and Spanish, and French and Spanish.

PORTUGUESE

Portuguese, the language of Portugal and of Brazil, is spoken by more than one hundred million people on four continents: Europe, Africa, Asia and America. Twenty percent of all residents of

the Western Hemisphere are Brazilians, who attest to the truth that one out of every five Americans–North, Central, South–speaks Portuguese as his native language.

Portugal's literature began on a high note in the twelfth century, and her discoveries in the Renaissance led her to all corners of the globe. In the last two decades Portugal has given to Canada many thousands of new citizens; and Brazil is attracting the attention of Canadians through her vast potentials as a land of culture, of natural resources, and of industry.

It is with Brazil that the Portuguese studies at the University of Toronto are particularly concerned, although the outstanding European heritage is by no means forgotten. Through small classroom and language laboratory groups, the introductory course (PRT 200) offered in Second or Third Year provides basic instruction in grammar, conversation, reading and writing. The second course (PRT 420) offered in Third or Fourth Year is an introduction to the wealth of Brazilian literature: poetry, prose and drama. In addition, a non-credit rapid-reading course in Portuguese (PRT 195) is offered without prerequisite to staff and students in any Division of the University.

Portuguese 200 and 420 serve the programme in Latin American Studies and any student, specializing or not, who may wish to begin a study of a new language in a higher year.

LATIN AMERICAN STUDIES

Spanish and Portuguese join with the Departments of Anthropology, Geography, History, Political Economy and Sociology in an interdisciplinary programme for specialists which is designed as an introduction to the culture and civilization of the two hundred million inhabitants of Mexico, Central and South America who speak Spanish and Portuguese. The programme provides a thorough grounding in the two languages and offers a panoramic view of the literatures written in them, both peninsular and American (a mature understanding of the Hispanic past being indispensable for an intelligent appreciation of the American present). It focuses attention on Latin America's historical development and geographical organization, its human and social patterns, as well as its economic and political institutions. Combining, in its two-stream structure, flexibility and breadth of approach with possible specialization, the programme is intended to prepare students for the diplomatic service and other government agencies international in scope, as well as for positions in university teaching and in industry.

LINGUISTICS

Director, Centre for Linguistic Studies: Professor Martin Joos
Undergraduate Co-ordinator: Professor J. J. Chew
Office of the Centre: 928-3479
Co-ordinator: 928-3298

Linguistics as an undergraduate study is a newcomer to the Canadian scene. It was established at the University in 1968 in response to student demands. Linguistics is not "language study"–it does not teach a single language or literature–there are language departments for that, and the Department of Linguistics does not intervene in their work.

The aim of Linguistics is to develop a worthwhile understanding of how all languages work, and of how different languages use disparate means for the same effects. The theme is the variety and unity of human language. The method is exploratory. Ultimately, the native language (in our case English) is to be explored in detail, not by studying books about it but rather by examining what people actually say and how they say it and what effects result from various ways of saying things. But that analysis of English is possible only for someone who has learned how to look at his own

language from an unprejudiced point of view—from outside it, so to speak. (Otherwise the exploration of one's native language is rather like trying to keep a fire in a wooden stove.) The student in elementary linguistics learns a method for exploring any language, and practices it on a variety of materials, English and other.

Undergraduate Linguistics is justified principally as a normal component of a liberal education. It is naturally available as preparation for graduate study towards the M.A. and Ph.D. degrees, either towards other professional work and teaching where some training in Linguistics is increasingly recognized as important, or towards work and teaching in Linguistics itself, where the demand for trained linguistics experts has exceeded the supply for the past thirty years and will long continue to do so. Toronto undergraduate Linguistics will serve as such pre-professional training. But that is not what it is principally intended for.

The principal aim is to make a contribution to a liberal education within the undergraduate years, an enrichment of the preparation for civic life and leisure and for a broad spectrum of professions, notably the civil service, commerce, diplomacy, journalism, law, politics, and teaching, even the teaching of Chemistry but of course more obviously the teaching of English, languages, and social studies. The courses are designed and arranged in a flexible sequence with an aim to making any allowed combination a rewarding experience. This may be seen as the service of Linguistics to those who seek a liberal education. But no course is reserved to those students alone, and none is reserved to specialists.

There is no fixed programme for specializing in Linguistics alone. Instead, appropriate four-year programmes are created (with advice when asked for) by the students, who can draw upon Anthropology, English, Mathematics and Computer Sciences, Modern Languages, Philosophy, Psychology, Sociology, etc. The total number of Linguistics courses in which a student may enrol in three or four years is limited to eight and five or six is the normal Linguistics component in a combined specialization programme. It is advisable to establish, as early as possible, advanced reading competence in two European languages other than English, usually including French.

Studies required for gaining admission to the one-year M.A. programme in Linguistics (or the First Year of the three-year Ph.D. programme) can be completed within any three undergraduate years. The Linguistics requirements are: JAL100, 228F & 229S, 230, 326 (or the basic course EAS100, EAS120, ISL216, NES142), and two other LIN courses: in substitution for these latter two, permission is regularly given to substitute from ANT220, PSY305F, etc.

MATHEMATICS

Chairman of Department: Professor G. F. D. Duff
Undergraduate Secretary: Professor R. Wormleighton

Departmental Office: 928-3320

Mathematics historically was concerned with concrete notions of space and number. From these concrete notions have evolved such abstract ideas as "set" and "group" which form the subject matter of contemporary Mathematics, and Mathematics today may be considered as the art or science of making deductions from given statements. The educations themselves and the methods used to make them come within the scope of Mathematics, while the original statements (hypotheses) largely lie outside. The observation that the results deduced apply to any collection of objects and relations that satisfy the hypotheses is the key to the immense power and surprisingly wide utility of Mathematics.

The pure mathematician is interested in abstract mathematical structures in their own right. He is guided by considerations of taste, beauty, and rigour and may view his subject as an art. The main

fields of pure Mathematics are algebra, analysis, geometry, and topology.

The applied mathematician is more interested in how he can use those structures to study some aspect of the world around him. Applied Mathematics, originally used to describe the application of Mathematics to certain classical fields of Physics, today includes also such fields as communication theory, numerical analysis, and the theory of games. Such areas as machine languages, and logic and automata form part of the rapidly growing subject of Computer Science. Originally used to describe the collection and tabulation of records required for conducting the affairs of a State, Statistics today is a discipline concerned with the production and assessment of quantitative evidence. Actuarial Science includes such topics as the theory of compound interest, and the application of probability theory to the hazards of survival. Although historically the main applications of Mathematics have been to physical sciences, contemporary Mathematics has significant utility for nearly all sciences, and for such diverse subjects as Economics and Linguistics. Mathematics is the language of precise thought.

There are then many different motivations for the study of Mathematics. To the humanist, Mathematics is part of the mainstream of human culture. To the scientist, engineer, or social scientist it is an important working tool. To the mathematician, it is an end in itself. The Department of Mathematics attempts to provide courses to suit all these diverse viewpoints.

The professional mathematician is most likely to find employment in universities, in the civil service or in government laboratories, and in financially or technologically oriented business firms. Research positions require post-graduate study. Such fields as teaching, computing, applied statistics, and actuarial science offer opportunities for B.Sc. graduates. A training in Mathematics has traditionally been a strong preparation for careers in law and business; today it is also an excellent foundation for further work in a wide variety of fields in the sciences and social sciences.

The sequential nature of Mathematics means that prerequisites are essential in many courses and steady work is usually required. Students are advised to consult the prerequisites of courses in which they may be interested in subsequent years. Where prerequisites are stated, they may be waived for students who can demonstrate adequate knowledge. Students who wish to have prerequisites waived are advised to consult the Undergraduate Secretary two months before the beginning of term.

Students who are contemplating graduate work in Mathematics, Applied Mathematics, or Statistics are advised to follow the Programme in Mathematics. The Programme in Mathematical Studies is designed mainly for those who, after graduation, wish to use their mathematical training in other fields; it provides rather more flexibility and a correspondingly reduced emphasis on mathematical analysis. The Programme in Mathematics for Teaching is less concentrated, but also satisfies the Type A requirements of The College of Education. The Programmes in Actuarial Science and Computer Science are designed to meet the specialized requirements of those fields. For students with interdisciplinary interests, programmes in Chemistry and Mathematics, Mathematics and Biology, Mathematics and Economics, Mathematics and Linguistics, Mathematics and Philosophy, and Mathematics and Physics are available. Students contemplating enrolling in these programmes of specialization should consult the requirements given elsewhere. These programmes are of course only suggestions for specified purposes: they are not the only programmes combining the subjects indicated by their names. Students are encouraged to make up their own combinations of courses to meet their own needs.

The Department offers a wide variety of first year courses. Students with both Math A and Math B (and marks of 75%) in Grade XIII who are contemplating a programme of specialization in Mathematics (including Applied Mathematics and Statistics) are advised to take MAT 140 and MAT 150, while PHY 120 is recommended also. Students with the same background who can take only one course in Mathematics should elect MAT 139. Students with MAT 139 who wish to follow the Mathematics Programme should consult the Undergraduate Secretary: they may be advised to defer MAT 250 until Third Year. MAT 135 and MAT 134 are designed for students interested primarily

in science or social science (the two are equivalent for prerequisite purposes), and are less intensive than MAT 139 or 150. Students with less than 66% in Math. A are advised not to select these courses. MAT 130 is a less demanding calculus course that still provides an adequate foundation for further work. MAT 110 is a special version of MAT 130 designed for those without Grade XIII Mathematics. MAT 120 covers a selection of elementary topics in Algebra, Calculus, Probability and Statistics and hence is not recommended for students who may wish to elect further courses in Mathematics. MAT 100 is designed as a cultural course, particularly for students in the humanities or other non-science fields who seek to learn something about Mathematics as a discipline rather than gain a training in Mathematics. CSC 108 and CSC 148 are half courses in programming available in both F and Y versions: CSC 118S and CSC 158S are subsequent courses that study the relation between computers and society.

There are too many higher year courses to describe in detail here. MAT 230, 234, 235, 239, 240F and 250 are continuations of the courses with numbers 100 lower. MAT 220 and 320 are continuations of the 'cultural' course MAT 100. The following courses are particularly worthy of consideration by students with the indicated interests who do not wish to follow a named programme.

Interest	ACT	APM	MAT	STA
Non-Specialists		236S, 331F, 336S	225, 300, 314F, 319S, 325, 364F	232
Social Sciences	223F, 233S	336S, 451F	234, 314F	232, 342S
Biological Sciences			225, 235	242, 332F
Physical Sciences		246S, 331F, 441	235, 239, 244F	242

Appointments for individual counselling should be arranged with the Undergraduate Secretary of the Department.

MUSIC

Courses Sponsored by Members of the Faculty of Music

Enquiries: 928-2633 or 3740

The Music courses in the Faculty of Arts and Science present the study of Music as one of the liberal arts, drawing upon concepts of musical analysis and theory to allow exploration in depth. As the approach to musical style is historical and humanistic it differs in some aspects from courses designed for composer and performer. Professional performing skills are not required for such a study.

The course offerings of the Department of Music fall into two categories: those requiring demonstrable proof of some theoretical training and those that require no prior training whatsoever.

Regardless of training or lack of it all students availing themselves of Music offerings will start out by taking MUS 100. Those who lack the above mentioned training, or do not choose to pursue more specialized musical studies, may proceed to such courses as MUS 223, 323 and 423. On the other hand the students who are qualified and who wish specialized courses will choose MUS 120 as well as MUS 100 and proceed to MUS 222 and 240. Armed with these subjects as prerequisites a wide range of musical areas becomes available for the student.

To graduate as a specialist in Music a student will take a minimum of six music subjects, these being MUS 100, 120, 222, 240, 322 and 422, in addition to which at least four courses or the equivalent in half-courses are required, GER 130/105, HIS 100, ITA 120Y/100/LAT 100, PHL 208F/209F, 318S, and, if GER 105 was taken, GER 205.

Qualified students, whether aiming at specialization or not, are encouraged to take further courses in Music both in the historical area, there being a rich choice of electives from which to draw, and the theoretical (counterpoint, orchestration, musical acoustics etc.).

Students who wish to qualify for the Type A certificate in high-school Music or to obtain training as performers or composers are referred to the Calendar of the Faculty of Music.

NEAR EASTERN STUDIES

Chairmen of Departments:
University College: Professor R. J. Williams
Victoria College: Professor E. G. Clarke

Departmental Office: 928-3181

The Department of Near Eastern Studies is concerned with the story of man's first breakthrough from neolithic savagery to settled urban life, and the subsequent development of high civilizations in Egypt and the Tigris-Euphrates valley, and later in adjacent areas, down into the Christian era.

The point at which the Department is content to let other departments, such as Islamic Studies or History, take over this story is not easy to define. For the Egyptologist and the Assyriologist, A.D. 600—the eve of the Islamic age—is a liberal limit. But some of the languages spoken in the older Orient, such as Hebrew or Syriac, continued to be used, at least in scholarly circles, long after this date, and important new contributions were made to their literatures, so that the Hebraist and Syriacist must extend the limit to include the Middle Ages. Hebrew, indeed, has been revived within the past century as a living language, and thus in the case of Modern Hebrew the concerns of the Department of Near Eastern Studies come right down to the present day.

The geographical scope of Near Eastern Studies is easier to define. It comprises the area of modern Egypt, Israel, Jordan, Lebanon, Syria, Turkey, Iran, Iraq, and the Arabian peninsula, although the scholar in Near Eastern Studies may find his interests leading him to the Indus Valley, to Ethiopia, or, following the peregrinations of the Jewish people, to Europe.

Near Eastern Studies clearly include a wide variety of disciplines. There is Archaeology, both for the prehistoric period when the archaeologist alone can reconstruct the story of man's doings, and for the historic periods when archaeologist and philologist work together, combining the evidence of tell and text to restore the fuller tale. The Near East is a particularly attractive area for the archaeologist because of its abundance of buried materials and the fact that it was here that man pioneered the path from barbarism to civilization. Archaeology includes not only the study of humble potsherds and crumbled walls, but of reliefs and wall paintings, architecture and sculpture, and other types of ancient art.

There is also Philology, the study of languages and documents with curious scripts—Egyptian with its hieroglyphs, the Babylonian and Assyrian dialects of Akkadian with its cuneiform writing, Hebrew, Aramaic and its graceful sister Syriac, and Hellenistic Greek (some other languages are taught only in the School of Graduate Studies). A knowledge of these languages is a key to the first-hand study of literatures far older than the Iliad or Odyssey. Egyptian stories like those of Sinuhe or Wen-Amon, or Babylonian compositions like the Gilgamesh and Creation Epics, hold honoured places in the history of world literature. The best known body of literature from the ancient Near East is, of course, the Jewish Bible, the Christian Old Testament, echoes of which are heard in all the great literatures of western civilization.

The findings of archaeologist and philologist provide the raw materials for the historian, who synthesizes the multifarious data and traces the broad movements of progress and regression which the student of the ancient Near East must discern if he is not to be overwhelmed by the vastness of the time span with which he must reckon.

Why study civilizations so remote in time and place from one's own as those of the ancient Near East? The only adequate answer is that one finds them inescapably fascinating. But what good do such studies do? They provide the background and the depth in one's field of vision that are necessary if one would see western civilization in true perspective. Anyone curious about the deepest foundations of our own society should consider taking at least NEH 111, and perhaps also a sequence in Near Eastern History in his Second and Third Years. The student interested in the westward shift of power from the Near East to Greece and Rome, and then to Europe, might combine courses in Near Eastern history with others in Greek and Roman history and medieval European history. A person interested in the science of Archaeology can hardly omit to take at least one of NES 271, 272, or 281 which can be combined with courses in Anthropology and Fine Art. Someone particularly interested in the Hebrew scriptures, the continuing fount of inspiration for both Judaism and Christianity, should take NES 141 and 241 however distant their other studies are from the Near East.

The student who wishes to savour the taste of an original Near Eastern text with the full pungency that no translation can ever convey should tackle a language, such as Hebrew, either classical (biblical) or modern. A person specially interested in Judaism or early Christianity might add Aramaic or Hellenistic Greek—the languages of a large corpus of Jewish literature and of the New Testament respectively—to his study of Hebrew in his Second Year. Egyptian may be taken in the Second Year with no prerequisite, but some prior knowledge of Hebrew or Arabic is required for Akkadian, whose clumsy writing system does not adequately express some important features in the structure of the language, which must be reconstructed by analogy with other Semitic languages. A student who plans a career in Iraqi Archaeology and who wishes to study Akkadian might consider it more practical to take Arabic rather than Hebrew as his first Semitic language.

A student wishing to specialize in any of the generally recognized fields of Near Eastern Studies, such as Egyptology, Assyriology, Hebrew Studies, Near Eastern History, or Near Eastern Archaeology will find the regulations for the constitution of an appropriate programme sufficiently flexible to allow him to select courses directly relating to his interests, with a minimum of constraint to take subjects he may consider uncongenial or irrelevant. His choice of subjects, however, will best be made with the advice of the Department. He would do well to acquire a knowledge of German as early as possible, and not to neglect his French. Some knowledge of Anthropology will be useful by teaching him how best to approach archaic, non-western societies. A course or two in Linguistics will stand him in good stead.

An interdisciplinary programme in Ancient History can be created by combining courses in Near Eastern History with courses in Greek and Roman History offered by the Classics Department, preferably in conjunction with a course in Greek or Latin and another in a Near Eastern language. A programme in Archaeology can be formed by combining courses in Near Eastern History with a selection from the offerings of Anthropology and Fine Art. The student seriously interested in mediaeval Judaism should combine his study of Hebrew with as many as possible of Arabic, Islamic History and Institutions, Philosophy, Mediaeval European History, Latin, and Spanish or Italian. One interested in modern Hebrew literature should aim at a wide acquaintance with European literatures, particularly Russian and German.

To what kind of careers do programmes specializing in Near Eastern Studies lead? A good background in Hebrew and Near Eastern History will be of great value to candidates for the Rabbinate or Christian ministry. Other programmes naturally lead to careers in museum work, archaeology, or university teaching and research.

The student who has made up his mind to proceed to a graduate degree in a particular area of

Near Eastern Studies will obviously want to follow an undergraduate programme in that same area. But graduates with little background in their desired field of specialization are admitted to the Graduate Department of Near Eastern Studies, although their training must take longer than in the case of a person with a fuller background. The undergraduate uncertain of where his interests really lie should therefore not rush into a premature specialization in this field.

PHILOSOPHY

Chairman of University Department: Professor J. G. Slater
Undergraduate Secretary: Professor L. M. G. Smith

Enquiries: 928-3311

College Departments:

Victoria College Chairman: Professor F. E. Sparshott
Trinity College Chairman: Professor G. Edison
St. Michael's College Chairman: Professor L. E. M. Lynch
Undergraduate Secretary (S.M.C.): Professor B. F. Brown

The Greek words from which "philosophy" is formed mean "love of wisdom" and all great philosophers have been moved by an intense devotion to the search for wisdom. What distinguishes philosophy from the physical and social sciences is its concern not only with the truths which are discovered by means of specialized methods of investigation, but with the implications such discoveries have for individual human beings in their relations with one another and in their understanding and appreciation of the world in which they find themselves. However, it has, in common with the sciences, an abiding interest in those basic assumptions about the nature of the physical and social world which underlie even the methodology by means of which scientists seek to explain their observations. It is from the challenge both to know and to accommodate such discoveries that the most searching and revealing philosophical questions arise.

Whatever his personal background or social position, each man has a set of beliefs about the areas of life which most concern him. But a philosopher is not content to accept, uncriticized and unanalyzed, either the conventional judgements of common sense or the current bases of science and scientific method. The philosopher calls into question even the most cherished of these beliefs, attempting to show that they are either well–or ill-founded, knowledge or false opinion. But the value of the endeavour lies in the questioning itself and not in the admittedly impossible task of coming to a complete understanding of the foundations of our knowledge.

Despite its intrinsic merits and its value as a means of developing critical awareness, there is no obvious practical application to which the student of Philosophy can direct his studies. The discipline is taught exclusively at institutions of higher learning, though it is hoped that it will, in the near future, be possible for graduates of a programme specializing in Philosophy to qualify for entry to a Type A certificate programme at The College of Education. There will, of course, be some students who will want to pursue graduate work in Philosophy, and to become professional philosophers, and many who will want to do further work in fields such as Law or Criminology where some knowledge of Philosophy is a distinct advantage. Many students whose primary interests lie in other areas, such as Classics, Fine Art, Music, Literature, Physical and Social Sciences, and Mathematics, will want to do some work in Philosophy, at least in those areas related to their own fields; e.g., Greek Philosophy, Aesthetics, the Philosophy of Music or of Literature, and the Philosophy of Science or of Mathematics.

A glance through the courses offered in Philosophy will inform any prospective student of the

names of some of the philosophers studied, and the special areas investigated in the Philosophy Programmes at the University of Toronto. A dictionary or encyclopedia will supply standard definitions of logic, ethics, epistemology and metaphysics. But whoever wants to know what Philosophy is must do it. A student can learn a great deal from a study of what has been written and thought by such philosophers as Plato and Aristotle, Augustine and Aquinas, Locke and Hume, Descartes and Spinoza, Kant and Hegel, Mill, Russell, and Wittgenstein, Husserl, Sartre, and Heidegger. But such study is, nevertheless, only an important preliminary. To read without bold and critical thinking is next to useless.

In order to foster as much interdisciplinary work as possible, and to allow maximum flexibility to students whose interests are not defined in terms of the traditional disciplines and areas of study, the Philosophy Programme is defined as the successful completion of at least 12 half-course in the Philosophy of the student's choice from those numbered 200 and above. Students are strongly urged to balance their programme with courses in other disciplines. To ensure that they are at least minimally prepared for entry into the best North American and British graduate schools, students planning to go on to graduate study in Philosophy are strongly advised to include within their programmes at least two courses in Logic (chosen from 206, 207, 327, 328, 329, 330,) two tutorial courses in the History of Philosophy (chosen from 307, 308, 309, 310,) and two non-historical tutorial courses (those currently offered are PHL 314, 315, 334). PHL 100, the introductory course offered in the First Year, is intended to serve as an indication of the range of topics, and methods of approach, covered in the discipline. It is not a prerequisite for any further course However, students who think they might wish to do senior work in Philosophy are advised to take it. Many third-and fourth-year courses require at least one course in Logic as a prerequisite; thus, students who are planning to continue taking courses in philosophy are strongly advised to take Logic in the Second Year (recommended 206).

At St. Michael's College, Philosophy is a college subject. Most of the courses offered by the College Philosophy Department are of full-year length. For reasons similar to those given above, the Philosophy Programme at St. Michael's College is defined as six full courses or their equivalent, chosen from those numbered 151, 250 and following, at least three of which must be from those numbered 350 and following, together with a total of four full courses in other disciplines. Students planning graduate study in Philosophy are advised to take the course in Logic (PHL 251), at least one course in the History of Philosophy (PHL 151, 261 - 271), and at least one of PHL 354 or 355. PHL 150, the introductory course offered in the First Year, serves the same function and has the same place in the St. Michael's College Philosophy Programme as does PHL 100 in the University Philosophy Programme.

PHYSICS

Chairman of Department: Professor J. M. Daniels
Associate Chairman, Undergraduate Studies: Professor R. L. Armstrong

Departmental Office: 928-2936

Physics is the study of material phenomena at its most fundamental level. Everyone has heard of many of the classes of natural phenomena in this category - heat, electricity and magnetism, light, and atomic physics, for example. The basic principles of all of these subjects were discovered by people who considered themselves physicists (or perhaps natural philosophers), and at the time of their discovery were considered a part of Physics. To many physicists the extension of the frontiers of such fundamental knowledge is an end in itself. Yet almost all of these have given rise to engineering or technological developments, and in many cases are now considered separate branches

of engineering on their own. Within the last thirty years, for example, the whole of electronics and nuclear energy has developed from Physics, and many of the techniques pioneered as part of Physics, such as x-ray diffraction, magnetic resonance, and spectroscopy, are now standard tools in Chemistry, Biology and other sciences. For this reason some knowledge of Physics is considered necessary in order to pursue a career in almost any other science. Physics is a pioneering science.

Another point which must be appreciated is that most physical phenomena can hardly be described in other than mathematical terms and a good knowledge of Mathematics is essential for a proper understanding of Physics, so much so that almost one-half of the courses forming a programme that provides for a specialized training in Physics must be in Mathematics. Thus the specialist programme in Physics consists of a set of core courses, including both Physics and Mathematics courses, which are considered to contain the basic knowledge which ought to be possessed by anyone who intends to specialize in Physics or any related subject. Standing in Grade XIII Mathematics and Physics is required to enter the Physics specialist programme *via* PHY 120, but without these the programme may be entered *via* PHY 130 in the First Year. The specified courses comprise about half of the courses in the full programme in the Second, Third and Fourth Years at this University, and the student is able to take a number of additional courses in Physics which are offered, and which are essential if he contemplates graduate work in Physics. Alternatively, the student may, in addition to the core, take courses in related subjects either to acquire specialization in some other subject as well, or to broaden his background. For example, the specialist programme in Astrophysics consists of the Physics core plus a number of courses in Astronomy normally taken in the Third and Fourth Year; the same applies to the Chemical Physics programme. There is a Mathematics and Physics specialist programme designed for those who intend to contunie in Theoretical Physics. Other programmes which may be easily constructed include Physics and Geology, Physics and Biology. In choosing his programme the student should always bear in mind what his future aim is and choose his courses accordingly. He should remember that Physics is one of the *basic sciences,* and that one of the advantages to be gained by study of Physics should be an ability to turn in many directions.

For those who do not wish to specialize in Physics but nevertheless require basic knowledge of the subject, the Department offers a two-year programme (PHY 130 and PHY 230), which is a survey of most of Physics and which can be followed by many of the other courses offered by the Department. Such a programme, while not having the same degree of intensive specialization as the Physics Programme, is a useful alternative and can lead to a teaching certificate if the programme includes the number of Physics courses necessary for entrance to the Type A certificate programme at The College of Education. In addition, the Department offers two one-year courses - PHY 140, which is a course of selected topics for scientists (and which can be followed by PHY 230 if desired), and PHY 101, which is a course about Physics rather than a course in Physics intended for those who wish to become acquainted with physical ideas and thought rather than to learn Physics as a subject.

What career opportunities are there after following a programme of specialization in Physics? This is very difficult to predict. In the last ten years or so, the main employers of Physics graduates have been universities (which have recently undergone a large expansion) and research institutes (mostly under government control and sponsorship). However, more and more positions are becoming available in private industry. Positions in industry seem to be for the most part in developing industries—such as computing, or nuclear energy—where no definite pattern of employment has yet grown up. For a research position a graduate degree (M.Sc. or Ph.D.) is very desirable.

POLITICAL ECONOMY

Chairman of Department: Professor W. T. Easterbrook

Departmental Office: 928-3334

COMMERCE

Supervisor of Studies: Professor S. G. Hennessey

Commerce courses offer opportunity for studies in economic organization, accounting, industry, trade, the legal environment of business, finance, investments, production, marketing, taxation, administrative theory, business problems and related topics.

Studies in Commerce are particularly appropriate for students who plan to assume administrative or management responsibilities on graduation, to undertake graduate studies in Economics, or, to pursue a professional career in Accounting, Actuarial Science, or Law.

Until the academic year 1969-70, Commerce subjects were available, primarily, to students in the programme in Commerce and Finance leading to the degree of Bachelor of Commerce. These studies, established in 1910, have required extensive work in two areas, Commerce and Economics. The curriculum has been designed to provide a broad and liberal education and not merely a technical training for students entering business. Most graduates are to be found in senior positions in a great variety of enterprises including the professions, the financial community, industry, insurance, government and the universities. Their careers reflect the general objectives of the programme: the development of a comprehensive awareness and the provision of an education that leads to meaningful participation in and contribution to our society.

Commerce courses are now generally available on the St. George campus. At the same time, the Commerce and Finance Programme continues to require serious studies in the joint areas of Commerce and Economics and leads to a Bachelor of Commerce degree. The general objectives of the programme have not changed. Students who choose to specialize will have a wide choice of options in each year, but will be required to probe in some depth in the subjects that they establish as their principal interest.

Subject to the necessity of placing limitations on numbers, all first-year students in the Faculty will be able to take two Commerce courses: COM 101 (Industry and Trade), and COM 100 (Financial Accounting). In this way it will be possible to gain some useful impressions that will help the student to decide whether to specialize in Commerce and Finance, to take some Commerce courses as part of their programme in later years, or to take all courses in disciplines other than Commerce. In their First Year, students will be able to explore such interdisciplinary possibilities by taking courses, for example, in Actuarial Science, Economics, Geography, Mathematics and Political Science.

First-Year students who have in mind specialization in Commerce and Finance are strongly advised to take COM 100 and 101, and, in addition, ECO 102 (Introduction to Economics), and MAT 134 (Calculus for Social Scientists). If they do not take these recommended courses they will be handicapped in their choice of subjects in their upper years; nevertheless, students without this first-year background can enter the programme in their Second Year by satisfying the course requirements indicated below.

Past experience indicates that only students with at least a high third-class standing in First Year should attempt these specialized studies. Those who do not take the first-year options recommended in the previous paragraph must take COM 100 and MAT 134 in the Second Year, and so will have limitations on their choice of other courses. Similar limitations will follow into the Third Year of the programme.

There are a number of ways in which students specializing in Commerce and Finance can arrange their choice of courses:

(i) with emphasis on Commerce: the principal choices are available in Third and Fourth years; some students who have done this go directly into business, law, and the government service; others do graduate work in business administration;

(ii) with emphasis on Economics: here again the real specialization comes in Third and Fourth years; there are a number of sub-choices within this field—in mathematical economics and in economic theory, for example. Many of the best students have so chosen and gone in to graduate studies in Economics, very often leading to University academic careers;

(iii) with emphasis on Accounting and Finance: many of these people have made a career in accounting or in the financial world; typically, a third or so of the class has been so inclined in recent years. The current re-structuring of the accounting profession's qualifying and educational requirements will probably make this emphasis more attractive in the future;

(iv) with emphasis on Actuarial Science: in this way the student can combine his undergraduate studies with some progress towards qualification as an actuary; only a limited number have done this recently;

(v) in the future, it seems likely that an increased number of students will choose a balanced selection of courses in Commerce, Economics, and the wide range of other disciplines that are available; those who so choose will be able to go in almost any direction, including entrance to a Type A certificate programme of The College of Education.

While these indicate the main choices made by students, they are merely suggestive; it should not be assumed that one's future career will be severely limited by the choice of one of them. The flexibility of the Commerce and Finance Programme, allowing special emphasis on a number of subjects, promotes the growth and development of students who wish to achieve an understanding of our society and who intend to provide responsible leadership in it.

ECONOMICS

Supervisor of Studies: Professor A. Kruger

Economics is a social science; that is, it is an exploration of the behaviour of people in society. Economics studies a particular range of human behaviour that has a strong influence on the structure, well-being, and development of a society.

Much of human activity is directed toward the satisfaction of material wants. In many areas of the world, the greater part of human effort must be directed toward meeting the most elemental demands for food, clothing and shelter. Even in technological-advanced societies, where these basic requirements can be met with comparative ease, the human desire for more goods appears never to be fully satisfied. In consequence, every society—regardless of whether it is capitalist, socialist, or communist in political orientation—is both competitive and co-operative. It is competitive because its members contend with one another to satisfy their individual wants out of a limited supply of productive resources. It is co-operative because the greatest possible supply of goods is available when the activity of producing them is co-ordinated and organized. The lives of human beings are very largely linked together into societies because of this need for co-operative action.

Economics studies the social problems and issues that arise out of this mixture of competition and co-operation in every society. In recent years, for example, it has been particularly concerned with the diagnosis of two separate phenomena: mass unemployment, and inflationary price increases. It explores the roles of government, of private business, and of individual consumers in relation to these and similar problems. Economics is similarly concerned with the question of

growth, from an "underdeveloped" to a materially-advanced society. It asks how this growth comes about, and it asks what new problems arise as new growth is attained. Economics deals with any issue arising out of the conflict between human demand for material goods and a limited supply of resources to satisfy those demands.

Because Economics studies human behaviour, it has links with other disciplines in the social sciences. A student who so desires can join his courses in Economics to courses in Political Science or in History, for example. It is in fact possible to specialize in Political Economy, a combination of Economics and Political Science.

Economic theory now makes considerable use of Mathematics in some of its inquiries. A student who chooses to specialize in Economics should take one basic course in Mathematics (MAT 134 is recommended). If desired, more such courses may be taken; and several Economics courses draw quite heavily on mathematical analysis. However, these courses are optional, offered only for those students whose interests happen to extend along mathematical lines.

Because of the advances in economic theory, an undergraduate degree cannot take the student sufficiently far to make him a professional economist. For that purpose, graduate work is necessary—and one objective of a programme in Economics is to ready those students who want to go on to graduate work in Economics. Graduate work, however, is highly specialized, and the undergraduate programme is *not* designed solely to feed students into graduate school. Those students thinking of graduate work should seek advice from the Department concerning their choice of courses.

Undergraduate training in Economics, as in other disciplines, is directed toward the goal of a liberal education. Its purpose is to familiarize students with the discipline of economic thinking, and so to equip them for intelligent appraisal of contemporary economic problems. It is intended to make students aware of the nature of economic science, and of the directions in which economic theory is currently moving. It should give students a solid preparation for training in such fields as Law, or for entry into business, industry or government.

POLITICAL SCIENCE

Supervisor of Studies: Professor A. Kruger

The study of Political Science at the University of Toronto is wide-ranging and diverse, including such fields as political theory, Canadian government international relations, and the detailed examination of political life and processes in numerous foreign societies (developed and developing). Students selecting courses in Political Science may be thinking of a career in public service; some may seek a more profound understanding of political thought and political processes, perhaps for an eventual career in teaching; others may simply wish to know more about the world in which we live. The course offerings in the Department are designed to meet these needs: specialized courses (often with a number of prerequisites) for those who require detailed understanding of particular fields, less specialized (though no less rigorous) courses for those seeking a broad background in politics.

Courses in Political Science dovetail with programmes in most of the other disciplines of the social sciences and the humanities: Economics, Sociology, History, Philosophy, and Psychology. A student interested in Canadian studies or urban problems, for example, would be well advised to choose courses from all these disciplines, as would someone interested in international affairs or foreign area studies. A student planning graduate work in the social sciences should seek to obtain a basic understanding of each of these disciplines. Students who plan advanced work in Political Science are strongly urged to prepare themselves with a solid background in Political Theory and Statistical Methods, for these are the tools of the profession.

Programmes of study of Political Science are very flexible and contain no required core courses in Political Science. Students seeking a genuine understanding of the discipline are strongly urged to take at least two courses in Political Theory. Students are further advised that POL 100 (Government of Canada), is a prerequisite for many advanced courses in the field of public administration and Canadian government, and that either POL 101 (Introduction to Political Science) or POL 200 (Political Theory) is a prerequisite to most advanced courses in Political Theory.

In planning his first-year programme, a student may choose any five courses offered by the Faculty of Arts and Science to first-year students. In Political Science, this includes most courses numbered 100 to 399, although 200- and 300- numbered courses are intended primarily for second- and third-year students. A typical first-year programme might include one or two courses in Political Science, plus a combination of courses from the following disciplines: Economics (ECO 100 is strongly recommended), English, Geography, History, Mathematics, Philosophy, Psychology, Sociology, a foreign language, or a course in the natural sciences.

PSYCHOLOGY

Chairman of Department: Professor G. E. Macdonald
Undergraduate Secretary: Professor A. N. Doob

Departmental Office: 928-3407

Psychology is that branch of science which seeks to understand the behaviour of organisms, both human and infra-human, normal and abnormal. Psychology accepts the individual organism rather than the collective or group as the unit of analysis. It attempts to determine how organisms perceive, how they develop and change over the course of their life histories, how they choose among alternative courses of action and, particularly with humans, how they relate to their fellows and to social institutions. The courses in this Department are designed to further an awareness of the fundamental principles of Psychology, its research findings, and the means by which psychological knowledge is acquired. The emphasis, thus, is upon scientific inquiry, rather than upon the development of service skills. Experimentation, laboratory work, and Statistics are considered fundamental tools to basic Psychology.

As a career, today, Psychology is a heterogeneous and far-flung enterprise, and psychologists are far from agreeing on the problems they should study, the methods they should employ, or the theories that should claim their allegiance. As a research science, psychologists working in the context of universities, research institutes (public and private), and large corporations, investigate basic behavioral phenomena in areas such as physiological psychology, comparative (animal) psychology, developmental psychology, the psychology of individual differences, clinical psychology, and social psychology. Quite often research psychologists collaborate with scientists in other fields to work on particular problems. For example, with medical scientists they may jointly work on such problems as the behavioral effects of drugs, the behavioral effects of sensory deprivation (through prolonged isolation), and the application of conditioning to modifying behavior disorders. With engineers, they may examine the effects of memory, perception, fatigue, etc., on skilled performance of one sort or another. In more "applied" settings psychologists are involved in such fields as Law, Medicine, Education, Industry, and Religion.

It should be noted that students who are interested in Psychology as a career within any of the aspects suggested above, must be prepared for a period typically ranging from three to four years of graduate training. Gone are the days when the B.A. was sufficient to land an exciting and creative position in some area of Psychology. Our Department, consistent with departments of Psychology across North America, provides courses which represent an exposure to the basic sub-

ject areas of contemporary Psychology and does not provide for the direct training of professional service skills. The courses may be of value both to the potential specialist within Psychology as well to students planning careers in business and industry, in the medical and legal professions, in teaching, in nursing; and in social work. In all cases, however, further graduate work or on-the-job training, or both, are required.

To guide the student wishing to specialize in the field of Psychology as an undergraduate, the Department has set forth certain guidelines. First, a minimum of seven courses (equivalent to fourteen half-year courses) in Psychology should be taken. This relatively small minimum number of courses required underscores this Department's belief that even the student specializing in Psychology should be encouraged to take a variety of courses in other areas among the humanities, social sciences, and natural sciences, but at the same time the student may take more than the minimum of seven, if he wishes. Second, the Department recognizes that the undergraduate specializing in Psychology should, in addition to content courses, have some exposure to laboratory techniques, research and statistical methodology, and the experience of conducting a research project. Hence a laboratory course (PSY 320, 321 or 322) a statistics course (PSY 200, 201) and a research project (PSY 400) must be included in the minimum of seven courses in Psychology. Third, although no specific course prerequisites are instituted, recommended basic preparation for each course is indicated in the course descriptions so that the student is appropriately advised, but without restricting flexibility. In addition, certain courses may have to be restricted on a priority basis relating to the year of the student in order to avoid overcrowding. Normally a student seeking to specialize in Psychology would take the introductory course in his First Year and take additional Psychology courses in his Second, Third, and Fourth Years, reserving his thesis (research project) to his Fourth Year. It should be noted that any student, even if he is not specializing in Psychology, may take most if not all of the Psychology courses offered and may, in fact, defer the decision to specialize in Psychology as long as he can eventually satisfy the minimum requirements for specialization.

RELIGIOUS STUDIES

Chairman of Departments:

Victoria College:	Professor the Reverend K. J. Joblin
Trinity College:	Professor G. A. B. Watson
St. Michael's College:	Professor the Reverend A. Gibson
University College, Department of Near Eastern Studies:	Professor R. Williams

Enquiries: 928-3926

Religious Studies, as an academic discipline, is based upon a broad concept of the fundamental significance of religion in the life of the individual person and of society. The intention of the Department is to provide students with an opportunity to deepen their understanding of man and his institutions by exploring in various ways the ultimate questions and convictions which have affected the foundations of his life throughout history.

The breadth of the concept of religion which is assumed in the academic approach to it is reflected in the diversity of perspectives and methods involved in the courses that are offered by the Department as well as in those recommended from other disciplines. Furthermore, students participating in the study of religion are encouraged to bring to that study the instruments of critical and sensitive enquiry which they have developed in other areas. Using the perspectives and methods of various disciplines, separately and in combination, fundamental assumptions and questions pertaining to personal and social values and beliefs, which are too frequently excluded from

other forms of enquiry, are exposed and systematically probed in an intellectual atmosphere of freedom and thoroughness.

Throughout history, man has expressed his profoundest convictions, questions, aspirations, and fears in many ways. His art, philosophy, conduct, social institutions, even his theories about the physical universe, have conveyed and illuminated his measure of himself and of the world in which he lives. From time to time these forms of expression coalesce within a particular pattern and tradition which we may identify as a "great" or a "world" religion. But along with such religions—both within them as well as outside them—are the individuals, each with his own personal convictions, values and interpretations of experience and of the symbols by which he represents to himself the ultimate concerns of life. The examination of all of this constitutes the academic enterprise which we title Religious Studies.

Those who wish to specialize in this area will find that no attempt has been made to delimit severely the direction of their enquiry. There is no one programme. Rather, students have the freedom and the responsibility of planning their own programme within the wide limits of available courses. The Department suggests to students who wish to specialize in Religious Studies that approximately half of the total number of courses they take in the Faculty be chosen from those listed by the Department, and the other half from the Faculty's offerings as a whole. Quite unique and even unlikely avenues of learning are thus possible. Faculty advisers should be consulted in shaping a particular programme.

To expand human awareness in areas which affect directly the foundations and quality of life is not easy, but in our age it is vitally important. To prepare for life, in addition to preparing for a career or for graduate study, is, among other things, to learn how to ask ultimate questions and work toward solutions. The Department of Religious Studies is committed to the encouraging of this process and to the critical and creative extension of it into areas of individual or corporate blindness.

Students who wish to continue into graduate schools of religion will find an increasingly wide opportunity to do so in North American universities, and may think of their undergraduate study as preparation for this. Needless to say, there are also opportunities to continue in schools of Social Work, Counselling, Theology, and other fields; increasingly, however, in such humanistic fields graduate schools look not at the type of discipline in which a student has been "trained" but at the depth and breadth of his undergraduate education, as such. The same, indeed, can be said of many employers.

A careful reading of course descriptions in Religious Studies will suggest to the student with more than one area of interest a number of ways in which a particular programme may be constructed, combining selections from Religious Studies with offerings from other departments. For example, the courses listed by the Department in the calendar may be combined with courses in Philosophy or Psychology or Sociology or Political Science to create an investigation in the psychology of religious expression, the philosophical analysis of religious language, the sociological analysis of religious institutions, the political impact of religious institutions and belief, religious motivations in human behaviour, etc. Similarly, religion and the arts can be creatively fashioned as an area of study by a selection of courses in Religion, Fine Art, Music and the literatures. By combining courses in Religious Studies, Near Eastern Studies, East Asian Studies and Islamic Studies, a variety of programmes in religious and cultural beliefs may be planned; the focus here could be achieved through language study or through works in translation. Not least important is the possibility for comparative study of religions or the study of basic religious beliefs in one or many cultural traditions.

SLAVIC LANGUAGES AND LITERATURES

Chairman of Department: Professor K. B. Feuer
Undergraduate Secretary: Professor G. Zukulin

Departmental Office: 928-4895

The Department of Slavic Languages and Literatures offers an extensive range of courses in Russian language and literature, four-year sequences in Czech (and Slovak), Polish, Serbo-Croatian and Ukrainian languages and literatures, and some advanced courses in Slavic linguistics. Within this range there are courses suitable for inclusion in a wide variety of programmes of study irrespective of whether the student has studied Russian in Grade XIII or not. Some students may specialize intensively in Russian language and literature. Others may simply wish to gain a working knowledge of Russian to aid their reading of important material in another field, as, for example, science or social science; for such purpose the two-year sequence SLA 100 followed by Slavic languages and literatures may also be included in any programme, and, in particular, even in a programme that does not contain Russian. Language study in the Department emphasizes skills in using literary materials, and it also employs oral methods, combining small instructional groups with some laboratory or conversational practice.

Students who have not studied Russian in secondary school should not consider themselves at a disadvantage when considering specialization in the Russian or Slavic field. It is still not common for secondary schools to offer Russian, and the Toronto programme in language is by itself capable of providing a very good foundation for specialized work.

Students who have studied Russian in secondary school and would like to continue it, should take SLA 121 (or SLA 201 if their chief interest lies in the natural or social sciences). If a student is inclined to begin a specialization in Russian or Slavic at the University, he should include SLA 100 (first-year Russian) in the first-year programme. Also recommended for first-year students with an interest in the Russian field, whether or not they are studying Russian language, is the course "Introduction to Russian Literature" (SLA 110), which is designed to serve as an introduction to some great works of Russian literature and to some significant questions of Russian intellectual and social development.

First-year students should also note that they may enrol for the Department's courses SLA 205, 206, 207, 208, (elementary Czech, Polish, Serbo-Croatian, Ukrainian) and also courses SLA 215, 216, 217, 218 (Czech and Slovak, Polish, Serbo-Croatian and Ukrainian literature and culture). Not all of these courses are offered in every year, so students planning to take them should consult the "Schedule" included in the Department's list of courses, and make their plans accordingly.

The Department offers two Specialist Programmes, Russian Language and Literature and Slavic Languages and Literatures. The first requires seven "core" courses in Russian language and literature, and three additional courses chosen from offerings in Russian literature or Slavic Linguistics. The second requires eleven courses in the Department, including the seven "core" courses in Russian, plus three courses in another Slavic language and literature (Czech, Polish, Serbo-Croatian or Ukrainian). Both programmes include the possibility of enrolment in fourth year seminar-type courses which will allow qualified students to take up specialized subjects and to carry out individual research projects.

Students enrolled in these programmes are free to follow their own interests in choosing their remaining courses. Some may elect to do further work in Slavic Languages and Literatures, while others will range far afield. Those emphasizing Slavic linguistics will profit from courses offered by the Departments of Anthropology and Linguistics, while the student whose primary concern is literature may be drawn to many other studies—in English or other literature, in philosophy, psychology, the history of music or art, in Russian and East European history, in Marxism or Political sociology.

Students who propose to study Russian and a second, non-Slavic language with a view to teaching in the secondary schools should enrol in a programme representing specialization in Modern Languages and Literatures from their Second Year. Within this programme and including first-year prerequisite courses, students may acquire the 21 Russian credits (7 courses) required for entry into the Type A certificate programmes in English and Russian, or French and Modern Languages and Literatures at The College of Education. Furthermore, qualified students in Modern Languages and Literatures have the opportunity to spend their third undergraduate year abroad at a university or universities recommended by the appropriate departments.

The student whose interest in the Russian or East European world is political or historical or sociological can specialize in Political Science or History or Sociology and at the same time take language courses, and perhaps selected courses in literature, in this Department. Students planning to specialize in Economics, for example, or in Psychology or Mathematics or any number of other fields, who have a special interest in the Russian or East European area, will find an advanced knowledge of Russian or of another Slavic language an important intellectual and professional asset. In recent times many fields of research have included serious and extensive work in the Russian and East European area and in Russian and Asian studies. In academic fields like History, Political Science, Economics, Sociology, professional careers can now be devoted to the study of some part of the Russian and East European area. The growing importance of Eastern Europe in contemporary affairs has not only given great impetus to the growth of Slavic Studies in Western universities, but it has the effect of making academic work in these areas especially lively and relevant. The study of literature, too, is invigorated by such a sense of contemporary relevance.

Students with literary interests, specializing in English or another modern language, will find profit in the study of Russian or another Slavic literature. Such students may also find attractive the opportunity to take some important literary courses in Russian or other Slavic literatures without needing a knowledge of any Slavic language.

Graduate programmes in the Russian and Slavic areas have expanded widely in recent years, so that many opportunities now exist for advanced study in North America and Europe. For those with such graduate training there is now the chance of spending an academic year in the Soviet Union, through an exchange programme administered by the Centre for Russian and East European Studies at the University of Toronto. Many professional opportunities are now offered, especially in the academic world and in government service. There is certain to be a continuing need for specialists in these areas of Eastern Europe, to which too little attention has been paid in the past and which are today assuming a primary role in the world's intellectual, cultural, political and scientific affairs.

SOCIOLOGY

Chairman of Department: Professor P. J. Giffen
Supervisor of Studies: Professor K. N. Walker

Enquiries: 928-3412

Sociology seeks a more accurate and insightful understanding of the way human beings relate to each other as friends, lovers, members of a family, students and teachers, workers and employers, French-and English-Canadians, and in the multitude of ways each of us is part of Society. In contrast to Psychology, which deals mainly with processes occurring within individuals, Sociology examines the web of social relationships among people. In contrast to social work, which emphasizes practice in society, Sociology seeks mainly to understand.

Of course, understanding has many practical uses. The increasing complexity of modern society creates problems for which there are no ready-made answers. Insofar, as Sociology consists of a

body of tested theory and reliable facts, it can contribute to an appreciation of the dilemmas confronting human beings in achieving and maintaining the kind of society in which they hope to live. In a rapidly changing world, traditional explanations often prove unreliable, both as a basis for understanding and as a guide to action. In this situation, Sociology constitutes a valuable source of knowledge for both the individual and society.

While Sociology need not be your ultimate professional choice, it can make an important contribution to a career in teaching, journalism, social work, medicine, the ministry, business management, politics, and in fact, any career in which one must deal with other persons as members of human groups. You may also wish to study Sociology as a means of going beyond the limiting horizons of personal experience in the narrow circle of your own family, social class, race, and nation. Sociology usually brings a greater awareness of and tolerance for alternative ways of life, and an ability to feel more at home with persons of other cultural backgrounds.

In pursuing its studies, Sociology uses the methods of science as well as those of the humanistic disciplines. It asks how our ways of thinking, feeling, and acting are shaped by our social experience, how they came to be what they are, and how they are changed. By comparing various social systems, Sociology helps to reveal the nature of taken-for-granted and ordinarily unquestioned social behaviour, for the sociologist is never content to accept only 'common sense' explanations.

Today there are many sociologies: of politics, religion, the family, mass media, art, urban life, crime, medicine, occupations, industry, education, racial and ethnic groups, and so on. All are specialized parts of the whole study of human behaviour in its social context. The multiplication of specialized fields has gone hand in hand with the expansion of employment opportunities for students of Sociology. Many branches of government, industry, and commerce now employ sociologically trained personnel. Public relations, market research, industry, journalism, radio and television, penal institutions, social welfare agencies, planning boards, and education at all levels, provide opportunities for students of Sociology.

In Canada and abroad, the demand for professional sociologists is currently very high for teaching, research, consulting, and administrative positions. A professional career in Sociology, however, requires advanced training beyond the undergraduate level.

The Department of Sociology offers a specialist programme which combines studies in sociology with related studies in other departments. A number of variants of this programme enable the student to emphasize studies in Canadian society, comparative social structure, inter-personal relations, political sociology, social and economic organization, urban sociology, or some other specialty. Recommended programmes in each of these specialties are to be found in another section. Studies in Anthropology, Economics, Geography, History, Philosophy, Political Science, and Psychology—to mention only a few examples—are all relevant to the various specialties in Sociology, and may be productively combined with courses in this department.

The specialist programme may be entered in either Second or Third Year. While a first-year course in sociology is not required, it is strongly recommended. Any one of SOC 101-106 is a suitable preparation for later courses, and introduces students to the basic concepts and perspectives of Sociology. SOC 101 and 105 deal extensively with a number of fields of Sociology, while each of SOC 102-104 and 106 treats a particular field more intensively.

Many of the advanced courses in Sociology have prerequisites, especially concerning basic theory and the logic and methods of research. Some courses assume competence in statistics. For these reasons, any student considering advanced courses is strongly urged to include SOC 201 and either 203 or 313 in his programme of study. Students planning graduate studies in Sociology are particularly advised to take these courses.

Students contemplating entrance to a Type A certificate programme at The College of Education should complete at least eight sociology courses in four years.

More detailed descriptions of courses together with preliminary bibliographies may be obtained from the Department of Sociology.

ZOOLOGY

Chairman of Department: Professor D. A. Chant
Associate Chairman: Professor R. R. Langford
Undergraduate Secretary: Professor J. B. Falls

Student Counselling Service: 928-8879
Departmental Office: 928-3473

Zoology is the branch of the biological sciences concerned with the animal kingdom. It relates to such major human problems as population numbers, war, famine, disease, conservation, pollution, and the need for outdoor recreation. The study of Zoology provides a broad perspective of man's place in the natural world. Basic awareness of the population explosion and its consequences have come from Zoological research. Ecological studies of the interaction of plants and animals show how famine and disease follow the unwise use of our habitat, and how pollution aggravates these problems. Life in our rivers and lakes is studied not only because they produce fish, but also because their oxygen and chemical contents affect all life. Zoology plays a part not only in the study of life on our planet, but also in the design of life-support systems for space travel. One modern aspect of Zoology is animal behaviour, the study of which helps us to understand human behaviour in warfare, politics, and other activities. Zoologists study the effects of radiation on animals and their surroundings, and formulate rules that can be applied to man. Much of the research done in medicine depends on discoveries made with other animals and applied to man.

Historically, Zoology was largely an observational science but now has become experimental and theoretical and depends in its research on the modern principles of mathematics and the physical sciences. The main theoretical contributions of zoologists have been in the understanding of life in terms of physical and chemical mechanisms, and the theory of organic evolution.

A zoologist is a scientist who is engaged in the study of the structure, the functioning, and the interrelationships among animals. The general field of Zoology is divided into a large number of special areas of study and research. Zoology may be divided on the basis of the classification of animals. Examples of these divisions are: Protozoology, Entomology, Mammalogy, and Ichthyology. Another way is to divide it by levels of organization and methods of study such as: Molecular Biology, Cell Biology, Radiation Biology, Physiology, Genetics, Ethology, and Population Biology.

Modern Zoology depends on knowledge in many other scientific disciplines. The fruitful interaction of Zoology with the other sciences is encouraged at the University of Toronto. Special branches of Zoology can be combined with studies in other fields, such as Anthropology, Botany, Geology, Mathematics, Medical Biophysics, Parasitology, Paediatrics, and Psychology. Many of the professors in the Department of Zoology research and teach in other departments of the University as well and are available to counsel students. Formal recognition of this is shown by the cross-appointments of Zoology staff to other departments of the University. Not only is there interrelationship among the University departments, but this also extends to Institutes and various divisions of Government. Members of the Zoology Department maintain active programmes in affiliation with the Royal Ontario Museum, the Great Lakes Institute, the Ontario Department of Lands and Forests, and the Fisheries Research Board of Canada, to mention but a few associations. In addition to the previously mentioned disciplines, students are encouraged to incorporate in their Zoology programmes courses in the areas of Anatomy, Biochemistry, Microbiology and Physiology. The relationships and opportunities for research and study between the different disciplines are constantly being investigated and extended.

Careers in Zoology are mainly in research, which is the search for new knowledge on which to base our understanding of biological principles; in teaching at the levels of the high schools, community colleges, and universities; and in technical biological work such as drug testing, pest control,

fish and wildlife management, and animal production. Professional careers in Zoology require specialization at the undergraduate level, and usually an advanced degree. Students should bear this in mind when planning their programmes.

Students who intend to become high-school biology teachers are urged to plan their programmes to meet the requirements of the High School Assistant's Certificate, Type A. For current information on these requirements check with The Ontario Department of Education, 44 Eglinton Avenue West, Toronto, or The Secretary, Faculty of Arts and Science, University of Toronto.

Two types of courses are offered by the Department of Zoology.

(1) Generalist courses, primarily for the student who either does not wish to specialize at all in any discipline or who wishes to specialize in a quite different discipline yet include some Zoology in his programme. These generalist courses cover a broad area and stress the relationship of special aspects of Zoology to other human activities.

(2) Specialist courses, primarily for the student who wishes to specialize in Zoology or Biology. These specialist courses deal directly with the subject and the relationship of this subject to other disciplines is not stressed.

The student specializing in Zoology or Biology may take generalist Zoology courses in areas other than those of his specialty in order to broaden his background in the Life Sciences, and to study their relationship to other disciplines.

There are no rigid prerequisite or co-requisite requirements for any course. Those listed are only suggested, not required. However, students must realize that courses are designed on the assumption that the students who are enrolled will have the suggested prerequisites in their background and will be enrolled concurrently in the suggested co-requisite courses, if any. A person who lacks the suggested prerequisite may be excluded from certain courses because of limitations of space or equipment.

In making a selection of Zoology and other science courses in a given year, the student should ensure that prerequisites for courses given in other departments in future years are obtained.

Even if a student does not seek to specialize in Zoology, he may enrol in any course offered in Zoology. The following courses are designed specifically for students who do not intend to specialize in Zoology: ZOO 200, 210, 211, 212; they offer a basic presentation of the subject with a broader point of view than possible in specialist courses.

There is no prescribed programme for students specializing in Zoology, and such students also may enrol in any course offered by the Department. However, students who wish to specialize and to prepare for a career in Zoology are advised to build their programme along the following lines:

In First Year - BIO 100 or 120, CHM 120, PHY 140 or 130 (normally followed by 230) and a first-year Mathematics course other than MAT 100.

In Second Year - CHM 235, STA 232 or 242, and three of ZOO 220, 221, 222, 223, 224, 226.

Because ZOO 225 depends on CHM 235 as a prerequisite, and on Biochemistry as a co-requisite, it is preferably deferred to the Third Year.

In addition, ZOO 250, 251, 252, 253, 254 are available to second-year students who desire them for programmes in this or other disciplines.

In the Third Year, students specializing in Zoology are encouraged to take as many of the remaining courses in the ZOO 220-226 series as possible, and additional courses in the ZOO 250 series are available for their consideration. In the Fourth Year, a wide variety of advanced courses is available for those with the necessary background.

Many variations on the suggested programme are possible, depending on the student's individual interests and needs. For example, a student interested in Quantitative Ecology may wish to take additional courses in Mathematics; a student interested broadly in Biology may wish to substitute

courses in Botany for some of the above; or a student interested in Cellular Zoology or Physiology may wish to take more Chemistry, Physics, or Biochemistry than the suggested minimum. Specialist students are urged to take advantage of the counselling services provided by the Department before selecting courses for their programmes.

Students entering university with Grade XIII Biology may petition to enter directly into Zoology courses in the 210 or 220 series. Normally, however, they will be advised to take B10 120 to ensure an adequate background for further study in the Life Sciences. ZOO 200 is available to any student in the University in any year. Other courses in the 200 series are recommended primarily for students in Second or later years.

PROGRAMMES OF STUDY

The following selection of suggested programmes of study is presented here primarily to show how programmes can be created so as to achieve a particular emphasis in some specific field. These give a recommended first-year programme, and, in many cases indicate programmes that would be devised by a student in his second, third and fourth year who wishes to specialize in a given discipline or certain combinations of disciplines. Many of these reproduce in the New Programme the degree of specialization that was present in many of the previous "Honour Courses"; some show new specialization opportunities that the New Programme's flexibility now makes possible.

The list below offers examples of what can be done; it is by no means complete, indeed one could not list all the variants that are possible within a given programme to achieve special emphasis in a particular aspect of the subject. In general, the programmes suggested below list fewer than the five courses that a year's programme must comprise; this is deliberate, for students may specialize and at the same time follow other interests not directly related to the field of specialization, or, alternatively, specialize even more completely, if they wish to do so.

B.A. PROGRAMMES

The following suggested programmes of study in Languages and Literatures, the Humanities and the Social Sciences lead to a Bachelor or Arts (B.A.) degree. They are listed alphabetically.

Chinese Studies (Consult Department of East Asian Studies)
Many different combinations are possible and students should consult Departmental advisers in planning their programmes of study.
Recommended first-year preparation: EAS 100
Second-year programme: EAS 200/206, and one other EAS course.
Third-year programme: EAS 332/335, and two other EAS courses of which one should be a language course.
Fourth-year programme: Three courses EAS of which two should be language courses.

Classics (Consult Department of Classics)
Recommended first-year preparation in Greek:

(a) Two of GRK 120S, 121S, 122F, 123F for students with XIII GRK.
(b) GRK 100 for students without XIII GRK.

Recommended first-year preparation in Latin:

(c) Two of LAT 120F, 121F, 122S, 123S for students with XIII LAT.
(d) LAT 130 for students with only XII LAT.
(e) LAT 100 for students without high school LAT.

Second-year programme: One course-combination in GRK, together with one course-combination in LAT as given below.

GRK course-combinations:

(i) GRK 220 & 221 for students with first-year preparation (a)
(ii) GRK 220 & 221 or one of GRK 220, 221 and two of GRK 120S, 121S, 122F, 123F for students with first-year preparation (b).

LAT course-combinations:

(iii) LAT 220 & 221 for students with first-year preparation (c) or (d).

(iv) One of LAT 220 & 221 and two of LAT 120F, 121F, 122S, 123S for students with first-year preparation (d) or (e)

Third-year programme: Any two of LAT 320, 321, 322, 420, 421, 422, 423, 424, 425. Any two of GRK 320, 321, 322 or one of GRK 320, 321, 322 and one of GRK 220, 221.

Fourth-year programme: Any two of LAT 320, 321, 322, 420, 421, 422, 423, 424, 425. Any two of GRK 420, 421, 422, 423.

Economics (Consult Department of Political Economy)

Students who wish to do serious work in Economics should take the four core subjects—micro-economics, macroeconomics, mathematics and statistics—and complement these courses with four to eight additional courses in Economics.

Recommended first-year preparation: ECO 100, MAT 134

Fourth-year programme (1970-71): ECO (325F & 326S)/332, ECO 328

Economics and Mathematics (Consult Professor W. Haque, Department of Mathematics) (See description under B.Sc. programmes, Mathematics and Economics)

English Language and Literature (Consult Department of English)

For this twenty-course programme a student is required:

(a) to take at least ten and not more than fifteen courses in ENG,
(b) to achieve an average of B or better in the core programme of the ten courses (as set out below),
(c) to complete at least five courses outside the Department of English by the end of his fourth year, and
(d) to achieve standing in some form of Comprehensive Examination.

The core programme of ten courses is defined as follows:

One of ENG 200, 312, 303
One of ENG 302, 304, 413
One of ENG 212, 332
One of ENG 306, 415
One of ENG 308, 346, 368, 417
One of ENG 322, 324
One of ENG 218, 350
One of ENG 328, 338, 348, 419
Two additional courses chosen from the above, or any others in the 200-, 300- or 400-series. At least one 400-series course must be included in the ten courses.

English and One Other Subject (for double teaching certification) (Consult Departments of English, and of the other subject).

The core programme for ENGLISH is as follows:

One of ENG 200, 312, 404
One of ENG 302, 304, 413
One of ENG 212, 332
One of ENG 306, 322, 415
One of ENG 308, 324, 346, 368, 417
One of ENG 328, 338, 348, 419

One additional course, chosen from the above or from other courses in the 200-, 300-, 400-series. Consult the appropriate Department regarding requirements in the other subject.

English and Latin (Consult Departments of English and Classics)
Recommended first-year preparation: LAT (See under Classics); at least one course in ENG.
Second-year programme: Two of LAT 220, 221, 222; ENG (see regulations for double certification under English and One Other Subject).
Third-year programme: LAT 320 and one of courses in the 300 and/or 400 series; ENG (see regulations for double certification under English and One Other Subject).
Fourth-year programme: LAT: Two of the courses in the 300/or 400 series (of which LAT 420 must be one unless LAT 221 has previously been taken); ENG (see regulations for double certification under English and One Other Subject).

Fine Art—History of Art (Consult Department of Fine Art)
The total programme requires a minimum of ten courses in History of Art and must include FAR 101, 102, 200, 201.
Students are also advised to take FAR 100.
Recommended first-year preparation: FAR 100, 101, 102
Second-year programme: Should include FAR 200, 201 and a third Fine Art 100-series course if not already taken. By the end of second year students should have acquired a reading knowledge of two of French, Italian or German.
Second-, third- and fourth-year programme: Should include at least six of FAR 202, 220, 300, 301, 323, 324, 325, 400, 401S, 420, 421F, 422. The selection of courses and the sequence in which they are taken will be determined by the interests of the individual student and by the need to comply with stated prerequisites.

Fine Art—Studio (Consult Department of Fine Art)
The total programme requires a minimum of ten courses in FAR: four must be in History of Art (and include FAR 101, 102, 200, 201) and six in Studio work.
Recommended first-year preparation: FAR 101, 102, 110
Second-year programme: should include FAR 200, 201, 230.
Third- and fourth-year programme: should include at least four of FAR 330, 331, 332, 333, 430, 431, 432. The selection of courses and the sequence in which they are taken will be determined by the interests of the individual student and by the need to comply with the stated prerequisites.

French Language and Literature (Consult Department of French)
The specialist programme in French Language and Literature requires standing in a mimimum of then FRE courses taken as part of a four-year programme. No more than two of these courses may be from the series 120-199, and at least two of these courses must be from those listed as "Courses open to third and higher years" and "Courses open to fourth-year students". A mark of at least 70% must be achieved in each of at least seven FRE courses. It is highly recommended that a student take at least four courses outside the French Department.
To fulfill the Department's requirements in language proficiency a student must: (a) successfully complete FRE 371 or a special University examination in written French of the same standard as FRE 371, normally to be taken during the Third Year; and (b) pass a University oral examination, also normally to be taken during the Third Year. To fulfill the Department's requirement in French linguistics a student must successfully complete at least one of FRE 372, 373, 374, 475, 476 or Independent Study (FRE 290, 390, 490) on a linguistic or stylistic topic. Students planning a teaching career are strongly encouraged to take FRE 372. To fulfill the Department's literature requirement a student must successfully complete at least four literature courses (not including FRE 120), one of which must be primarily devoted to texts prior to 1800, and one of which must be primarily devoted to texts after 1800. Only two inter-college options may be counted towards this literature requirement.

The requirements for double-specialization in French *and* another subject (e.g. in Modern Languages and Literatures) are the same as above, save that a minimum of seven courses in French is required, of which at least three must be literature courses. Only one inter-college option may be counted towards this literature requirement. A mark of at least 70% must be achieved in each of at least five FRE courses.

Subject to the usual prerequisites, the above requirements may be fulfilled in any order the student wishes and the number of French courses taken each year may be determined by the student. However, the French Department recommends the following programme for a student enrolled in 1970-71:

Recommended first-year preparation: FRE 120 & FRE 140/142

Second-year programme: Two or more courses from the courses listed as "Courses open to second and higher years" (except FRE 200 & 300).

Third-year programme: Two or more courses from the courses listed as "Courses open to second and higher years" (except FRE 200 & 300) and "Courses open to third and higher years".

Fourth-year programme: Specialists in French Language and Literature should take at least three courses (double-specialists at least two courses) from those courses listed as "Courses open to second and higher years" (except FRE 200 & 300), "Courses open to third and higher years", and "Courses open to fourth-year students". Care should be taken to avoid selecting courses which duplicate the content of previous or concurrent courses.

French and Latin (Consult Departments of French and Classics)

Recommended first-year preparation: LAT: (See under Classical Studies); FRE 120 and FRE 140/142.

Second-year programme: Two of LAT 220, 221, 222; Two or more courses in FRE from the courses listed as "Courses open to second and higher years" (except FRE 200 and 300).

Third-year programme: LAT 320 and one of the courses in the 300 and/or 400 series: Two or more courses in FRE from the "Courses open to second and higher years" (except FRE 200 and 300) and "Courses open to thrid and higher years".

Fourth-year programme: LAT: Two of the courses in the 300 and/or 400 series (of which LAT 420 must be one unless LAT 221 has previously been taken): Two or more courses in FRE from the courses listed as "Courses open to second and higher years", and "Courses open to fourth year students".

Geography (Consult Department of Geography)

The total programme requires a minimum of nine courses in Geography, including GGR 100, 270, 320, 491 and GGR 390F/391F.

(Programmes in Physical Geography can qualify for the B.Sc. degree; consult the Department of Geography.)

Recommended first-year preparation: GGR 100, 101/220

Second-year programme: should include GGR 270

Third-year programme: should include GGR 390F/391F; GGR 320 can be taken in Third or Fourth year.

Fourth-year programme: should include GGR 491

German Language and Literature (Consult Department of German)

Recommended first-year preparation: GER 110, 120; or GER 120/130

Second-year programme: GER 210, and GER 220/230

Third-year programme: Two of GER 320, 321, 322*, 410. 420. 421, 422

Fourth-year programme: Two of GER 320, 321, 322*, 410, 420, 421, 422

*GER 322 is required of specialists.

Greek (Consult Department of Classics)
Recommended first-year preparation: As under Classics.
Second-year programme: One GRK course-combination as under Classics, and one of LAT 220 221, 222.
Third-year programme: GRK 320, 321, 322 or two of GRK 320, 321 322 and one of GRK 220, 221.
Fourth-year programme: Any three of GRK 420, 421, 422, 423, (430/431).

Greek and Roman History (Consult Department of Classics)
Three-year programme: Two GRH courses in each of second and third year, together with four courses in GRK and LAT with at least one in each language.
Four-year programme: Two GRH courses in each of second, third and fourth year, together with a total of six courses in GRK and LAT (at least one in each language to be completed by the end of the third year).

History–Modern History (Consult Department of History)
The total programme requires an academically coherent combination of courses chosen in consultation with departmental advisers so as to serve the interests of the student. A minimu m of seven courses in HIS is required in the Programme.
Recommended first-year preparation: HIS 100
Second-year programme: Two or three HIS courses.
Third-year programme: Two or three HIS courses.
Fourth-year programme: Prerequisite: Four 200- and/or 300-series courses in HIS. Two or three HIS courses, including at least one 400-series course.

Indian Civilization (Literature, Philosophy or History Specialists) (Consult Department of East Asian Studies)
Recommended first-year preparation: EAS 110; EAS 112 & 116 are also recommended.
Second-year programme: EAS 210, 211 and two of EAS 212, 213, 214.
Third-year programme:
Literature: EAS 310, 311, 312/313, 317/319; EAS 314 is also recommended.
Philosophy: EAS 303, 313, 312/314, 317; EAS 311 is also recommended.
History: EAS 302, 312, 313/314, 317/319; EAS 311 is also recommended.
Fourth-year programme:
Literature: EAS 410, 411, 412/413, 417/419; EAS 414 is also recommended.
Philosophy: EAS 403, 413, 412/414, 417; EAS 411 is also recommended.
History: EAS 402, 412, 413/414, 417/418/419; EAS 411 is also recommended.

Islamic Studies (Consult Department of Islamic Studies)
The total programme requires a minimum of nine courses in Islamic Studies, of which at least three shall be language courses and three history courses. Students who intend to enrol in this Programme are urged to contact the Undergraduate Secretary of the Department of Islamic Studies as soon as possible, and in any case not later than the end of their First year.
Recommended first-year preparation: ISL 214.

Italian (Consult Department of Italian and Hispanic Studies)

Italian and Latin (Consult Departments of Italian and Hispanic Studies, and Classics)
Recommended first-year preparation: LAT: (See under Classics); ITA 100/(121Y, and one of ITA 120Y, 190Y).

Second-year programme: Two of LAT 220, 221, 222; ITA 220Y/221Y/290Y, and ITA 222Y, ITA 223F, ITA 224S.
Third-year programme: LAT 320 and one of the courses in the 300 and/or 400 series; ITA 321 and one full course or two half-courses from the 300 and/or 400 series.
Fourth-year programme: LAT: Two of the courses in the 300 and/or 400 series (of which LAT 420 must be one unless LAT 221 has previously been taken); ITA: Two full courses or equivalent in half courses from the 300 and/or 400 series.

Japanese Studies (Consult Department of East Asian Studies)
Recommended first-year preparation: EAS 120, 124.
Second-year programme: EAS 220, 222 (and EAS 124 if not taken previously).
Third-year programme: EAS 320, 322, 206/321/323 (and EAS 224 if not taken previously).
Fourth-year programme: EAS 420, 426, and TWO of EAS 335, 421, (422F & 423S), 423Y, 424, 425, 427 (and EAS 206 if not taken previously).

Judaic Studies
Students wishing to pursue a programme of study of Jewish thought, literature, culture, religion and history may do so by combining courses offered in the Departments of Near Eastern Studies, Philosophy, and Religious Studies. Consultation with these Departments and with the Departments of History and Sociology, which offer courses in areas relevant to Jewish history and culture, will yield programmes of considerable concentration on Judaica.

Languages and Literatures
Many programmes can be devised which combine modern languages, ancient languages, or modern and ancient languages together. The pattern for such combinations could be basically the same, i.e. two courses (where offered) in each of the two languages chosen in each of the second, third and fourth years, the fifth course remaining a free choice.

(a) Courses are offered (not all in three or four year sequences) in the following modern languages: Arabic, Chinese, Czech (& Slovak), English, French, German, Hebrew, Hindi, Italian, Japanese, Persian, Polish, Portuguese, Russian, Serbo-Croatian, Spanish, Turkish, Ukrainian.
(b) Courses are offered (not all in three or four year sequences) in the following ancient languages: Akkadian, Classical Arabic, Aramaic-Syriac, Chinese, Egyptian, Greek, Hebrew, Classical Japanese, Latin, Pali, Sanskrit.
(c) Interesting combinations can be devised within (a), within (b), or by combining courses from (a) and (b).
(d) The Department of Education lists the following combinations of language courses which lead to Interim High School Assistant's Certificates, Type A in Ontario Colleges of Education: English and French; English and German; English and Russian; English and Spanish; French and German; French and Italian; French and Russian; French and Spanish; Classics (Latin and Greek); English and Latin; French and Latin; Italian and Latin.

Latin (Consult Department of Classics)
Recommended first-year preparation: As under Classics.
Second-year programme: One LAT course-combination as under Classics, of GRK 220, 221.
Third-year programme: Any three of LAT 320, 321, 322, 420, 421, 422, 423, 424, 425, (430/431). One course in GRK.
Fourth-year programme: Any three of LAT 320, 321, 322, 420, 421, 422, 423, 424, 425, (430/431). One course in GRK.
Note: GRK 320 and either GRK 221 or GRK 420 must be included in the overall programme.

Latin and another subject (except Greek) (Consult Department of Classics, and of the other Subject).
The Latin component of such a programme is recommended as follows:
Recommended first-year preparation: As under Classics.
Second-year programme: One course-combination in LAT as under Classics.
Third-year programme: Any two of LAT 320, 321, 322, 420, 421, 422, 423, 424, 425.
Fourth-year programme: Any two of LAT 320, 321, 322, 420, 421, 422, 423, 424, 425.

Latin and Italian (See under Italian and Latin)

Latin and Spanish (Consult Departments of Classics, and Italian and Hispanic Studies)
Recommended first-year programme: LAT: (See under Classics); SPA 100/120.
Second-year programme: Two of LAT 220, 221, 222; SPA 220Y/221Y and any three half-courses in the 200 series.
Third-year programme: LAT 320 and one of the courses in the 300 and/or 400 series; SPA 320Y and any three half-courses in the 300 and/or 400 series.
Fourth-year programme: LAT: Two of the courses in the 300 and/or 400 series (of which LAT 420 must be one unless LAT 221 has previously been taken); SPA 420Y and any three half-courses in the 300 and/or 400 series.

Latin American Studies (Consult Professor K. L. Levy, Department of Italian and Hispanic Studies)
Recommended first-year preparation: GGR 100/101/220, HIS 100, SPA 100/120. One of ANT 100, JAL 100, ANT 150, ECO 100, POL 101, SOC 101-105
Second-year programme: GGR 242, HIS 290/343, SPA 220Y and SPA 280Y. One of ANT 204, JAL 100, ECO 200*, 202*, FRE 120, POL 200*, 206*, 305, PRT 200, SOC 201*, 202*, 203*, 204-207.
Third-year programme: PRT 200, SPA 320Y and one of SPA 366F, 382S, 386Y, 466S, 470Y, 480F, 484Y. Two of ANT 340, ECO 324, 328, 345F, GGR 101, 220, 224. 322F, 338F, HIS 390, POL 304, 305, 306, 320, SOC.
Fourth-year programme: PRT 420, SPA 420Y and a 300- or 400-series SPA course. Two of ANT 441, 443, ECO 324, 328, 345F, GGR 101, 220, 224, 322F, 338F, HIS 390, 491, 492, POL 407, 417, SOC 401, 402, 451F, 451S.
Note: Students should consult the Departments concerned when making their choice; courses marked with an asterisk (*) are strongly recommended if later specialized work in one of the disciplines is contemplated. Students may also emphasize one or two of their disciplines by doubling or tripling courses in any year.

Linguistics [with (e.g.) Anthropology] (Consult Professor J. J. Chew in Department of Anthropology)
Recommended first-year preparation: JAL 100 (required not later than second year).
Second-year programme: LIN 228F, 229S, 230 (required not later than third year).
Third-year programme: LIN 326 (unless One of EAS 100, EAS 120, ISL 216, NES 142, is taken); Two of: JAL: 300, LIN 201, 333, 348, 349, 350 450, 491 ANT 220, PSY 305F plus a half course.
(Any of these may be postponed to a fourth year.)
Fourth-year programme: LIN 491 (optional if requirements have been met).

Linguistics and Mathematics (Consult Professor B. Brainerd, Department of Mathematics) (See description under B.Sc.Programmes).

Modern Languages and Literatures
For many years, several departments of the Faculty of Arts and Science (English, French, German, Italian and Hispanic Studies, Slavic Languages and Literatures) have co-operated to provide students with a framework for specialized study in Modern Languages and Literatures. More recently, the Department of Linguistics has offered at the undergraduate level courses which fit well into such a framework.
Recommended first-year preparation: At least one course (normally the basic course) in each of at least two modern languages (of which English may be one).
Second-year programme: Two courses in each of the two languages chosen in first year.
Third-year programme: Two courses at the appropriate level in each of the chosen languages.
Fourth-year programme: Two courses at the appropriate level in each of the chosen languages.

Music (Consult Advisers in the Faculty of Music)
Recommended first-year preparation: MUS 100, 120, HIS 100, GER 120/105.
Second-year programme: MUS 222, 240, ITA 120/100/LAT 100, PHL 208F/209F, 318S, GER 205 (if GER 105 was taken in previous year).
Third-year programme: MUS 322; MUS 343Y and 340Y/348Y are strongly recommended additions.
Fourth-year programme: MUS 422; MUS 443 and oher MUS courses are strongly recommended additions.

Near Eastern Studies (Consult Department of Near Eastern Studies)
Recommended first-year preparation: NES 100, NES 141/151/ISL 214.
Second- and Third-year programme: A minimum of six courses in Near Eastern History and Near Eastern Languages (which may be taken to include Arabic, see under Islamic Studies). At least two of these six must make a two-year sequence in one Near Eastern Language (including Arabic). If only six courses in NES or Arabic are taken in the second and third years, two further courses are required in cognate subjects, approved as such by departmental advisers, that are taught in other departments (e.g. courses in ANT, GLL, GRH, GRK, LAT, FAR, HIS, ISL, LIN, Modern Languages and Literatures, PHL, REL, SOC). If the second and third year programme includes seven courses in NES, then one course in a cognate subject is required.
Fourth-year programme: Three courses in NES; one course in a cognate subject (with Departmental approval). At least two of these four courses must be in two different languages.

Near Eastern Studies–Languages (Consult Department of Near Eastern Studies)
This represents an ideal programme for students specializing in Hebrew and Akkadian Languages. Many of the courses could be taken in later years than that suggested and, of course, different courses should be chosen to suit other areas of specialization.
Recommended first-year preparation: NES 100, 141, JAL 100.
Second-year programme: NES 211, 241, 271, LIN 220.
Third-year programme: NES 311, 341, 272.
Fourth-year programme: NES 411, 441, 471, 481.

Near Eastern Studies–History–Archaeology (Consult Department of Near Eastern Studies)
This represents an ideal programme for students specializing in Egyptian History and Archaeology. Many of the courses could be taken in later years than that suggested and, of course, different courses should be chosen to suit other areas of specialization.
Recommended first-year preparation: NES 100, ANT 100.
Second-year programme: NES 231, 271, 281F, 282S, ANT 204.
Third-year programme: NES 272, 331, ISL 214.
Fourth-year programme: NES 431, 471, 481, ISL 220.

Philosophy (Consult University Department of Philosophy)
The total programme requires a minimum of twelve half-courses from those numbered 200 and above. It is strongly recommended that these include at least two of PHL 206, 207, 327, 328, 329, 330, and at least two of PHL 307, 308, 309, 310 and PHL 314 and 315.
Recommended first-year preparation: PHL 100

Philosophy (Consult St. Michael's College Department of Philosophy)
The total programme consists of six full courses or their equivalent, chosen from those numbered 151, 250 and above, at least three of which must be from those numbered 350 and above, together with a number of courses in other disciplines totalling four full courses or their equivalent.
Recommended first-year preparation: PHL 150 (students who already have some acquaintance with philosophy are encouraged to take a 200-series course.)

Philosophy and Mathematics (Consult Professor F. Tall, Department of Mathematics and Professor A. Rosenthal, Department of Philosophy)
(See description under B.Sc. programmes)

Political Science (Consult Department of Political Economy)
It is strongly suggested that the student seeking a basic understanding of politics take at least two courses in Political Theory. Although POL 100 is not a required course in such a Programme, it is a prerequisite for advanced courses in Canadian Government and Public Administration, and is thus recommended as first-year preparation.
Fourth-year programme (1970-71): At least THREE Political Science courses.

Political Science and Economics (Consult Department of Political Economy)
Fourth-year programme (1970-1971): One course in Economics, one course in Political Science, one course in either Economics or Political Science.

Religious Studies (Consult Department of Religious Studies)
The programme normally requires an academically coherent combination of nine to twelve courses chosen in consultation with a faculty adviser so as to serve the interests of the student. It is ordinarily expected that the Programme will take four years. A coherent Programme should expose the student to a range of world religions and approaches to the study of religion. Suggested combinations of courses are outlined in the departmental brochure, available at College Registrars' offices.

Russian Language and Literature (Consult Department of Slavic Languages and Literatures)
The Programme requires ten SLA courses over the four-year programme:
Seven required Russian "core" courses:

For non-Matriculants: SLA 100, 220, 240, 320, 340, 420, 440.
For Matriculants: SLA 121, 221, 240, 321, 340, 440 and one 400-series course.

Three full courses of the following full and half courses:
SLA 110, 212, 311, 312, 330, 332, 436, 442F, 443S, 444F, 445S, 446.

Note that the seven Russian "core" courses listed above are the requirement for the Russian component in double-specialization within the Languages and Literatures or Modern Languages and Literatures Programmes.
Recommended first-year preparation: SLA 100/121.

Slavic Languages and Literatures (Consult Department of Slavic Languages and Literatures)
The Programme requires eleven SLA courses over the four-year programme:
Seven Russian "core" courses listed above under "Russian Language and Literature".

Three courses, including one 400-series course, in another Slavic language and literature (Czech, Polish, Serbo-Croatian or Ukrainian).
One of SLA 110, 212, 215-218, 311, 312, 330, 332 or a 400-series course. Note however that only one of SLA 215-218 may be counted toward the required eleven courses.
Recommended first-year preparation: For students with XIII RUSS: SLA 121, one of SLA 110, 205-208, 215-218 as available. For students without XIII RUSS: SLA 100, one of SLA 110, 215-218 as available.

Sociology
The programme requires a minimum of six courses in Sociology, including SOC 201 or its equivalent and one of SOC 203 or 313 (or one of the old programme courses in sociological theory,†SOC 301 or 323). Students entering this Programme should enrol with the Department of Sociology before the end of the first term in their second and subsequent years.
While the following recommendations represent different emphasises or specialties within the Programme, students may wish to select other combinations of courses to suit their interest, and should feel free to seek the advice of specialists in the Department in working out their programmes. Courses that are particularly central to a specialty are starred (*).

Sociology–Canadian Society (see minimum requirements above)
Recommended first-year preparation: Any one of SOC 101*-106; POL 100.
Second-year electives: SOC 205*, 206*, ANT 241, ECO 221, GGR 240*, HIS 250*.
Third-year electives: SOC 301*‘ 303*, 310*‘ ECO 320, 342, GGR 248*, HIS 361, 362, 363*, 366, 368, POL 308, 323.
Fourth-year electives; SOC 451F* and 452S*, HIS 462, POL 412.

Sociology–Comparative Social Structure (see minimum requirements above)
Proficiency in at least one foreign language should be developed throughout the Programme.
Recommended first-year preparation: Any one of SOC 101*-106*; EAS 102, 112.
Second-year electives: SOC 206*, ANT 204*, 220, ECO 227, GGR 242, POL 202*, 204.
Third-year electives: SOC 301*, 303*, 307* ANT 344, JAP 343. ECO 324*, EAS 306, 323, 325, GGR 338F*, 342F, 343, 344, ISL 302, POL 303, 324*.
Fourth-year electives: SOC 451F* and 452S*, ANT 420*, EAS 421, 423, POL 403, 422*, 419.

Sociology–Inter-Personal Relations (see minimum requirements above)
Recommended first-year preparation: Any one of SOC 101*-106*.
Second-year electives: SOC 202*, PSY 204S.
Third-year electives: SOC 302*, 306* or 308*, 309*, 310*, 317*, JAL 300, PHL 320S, 332F, 377, POL 330, PSY 302F, 303, 304S, 306S, 330F, 333F.
Fourth-year electives: SOC 451F* and 452S*, ANT 431 442, PSY 402S, 405F.

Sociology–Political Sociology (see minimum requirements above)
Recommended first-year preparation: Any one of SOC 101*-106*; ECO 100, 101, POL 100, 101.
Second-year electives: SOC 204*, 206, POL 200, 201, 202.
Third-year electives: SOC 301*, 304*, 307*, 314*, 316*, 318*, ANT 340, ECO 338, HIS 348, 361, POL 300, 304, 307, 308.
Fourth-year electives: SOC 451F* and 452S*, POL 400, 408, 409, 410. 412.

Sociology–Social and Economic Organization (see minimum requirements above)
Recommended first-year preparation: Any one of SOC 101*-106*, ECO 100, POL 101.

Second-year electives: SOC 204*, 206, 207*, ANT 204, FSM 200
Third-year electives: SOC 301*, 303*, 304, 307*, 311, 312, 314*, ECO 322, 344, FSM 300, HIS 361.
Fourth-year electives: SOC 451F* and 452S*, COM 401, FSR 400, POL 409, 410.

Sociology–Urban Sociology (See minimum requirements above)
Recommended first-year preparation: Any one of SOC 101*-106*, CSC 118S/158S.
Second-year electives: SOC 205*, FSC 200, FSE 200, FSM 200, GGR 224.
Third-year electives: SOC 310, 312, 315*, 318, ECO 333F, 334F, 345F, FSE 300, FSM 300, GGR 325S, 328S, 336F, 337S, 338F, POL 308, PSY 303F, 304S.
Fourth-year electives: SOC 451F* and 452S*, ANT 444, FAR 400, HIS 463, IND 424.

Spanish (Consult Department of Italian and Hispanic Studies)

Spanish and Latin (See under Latin and Spanish)

B.SC. PROGRAMMES

The following suggested programmes of study in Mathematics, the Physical Sciences and the Life Sciences lead to a Bachelor of Science (B.Sc.) degree if the required number of science courses are included in the overall programme. (See Page 13)

Actuarial Science (Consult Professor P. L. J. Ryall, Department of Mathematics)
This programme is designed to prepare a student for professional work as an actuary.
Recommended first-year preparation: MAT 134/135/139/150.
Second-year programme: ACT 223F & 233S; One of MAT 234/235/239/250:STA 242/252; (ECO 240F & 241S are recommended).
Third-year programme: ACT 323, 333; STA (332F & 342S).
Fourth-year programme: ACT 423/433; STA 432F.

Astronomy (Consult Department of Astronomy)
Recommended first-year preparation: MAT 139/(140 & 150), PHY 120 or equivalent.
The Programme comprises the following courses in Astronomy, Mathematics and Physics.
APM 246S, 331F
AST 300, 310Y, 400, 410Y
MAT 239, 244F, 339
PHY 220, 221F, 222S, 300, 302, 303F

Astrophysics (Consult Departments of Astronomy and Physics)
Recommended first-year preparation: PHY 120 or equivalent, MAT 139/ (140 & 150).
Second-year programme: PHY 220, 221F, 222S, MAT 239, 244F, APM 246S.
Third-year programme: AST 300, 310Y, PHY 300, 303F, MAT 339, APM 331F.
Fourth-year programme: AST 400, 410Y, PHY 302, a further selection of courses in the 400 series.

Biochemistry (Consult Department of Biochemistry–Faculty of Medicine)
Recommended first- and second-year preparation: BIO 100/120, CHM 120, CHM (220 & 235), MAT 130/135/139/150.
Third-year programme: BCH (321 & 371), CHM 340.
Fourth-year programme: BCH 471, three of BCH 421-426.

Biochemistry and Chemistry (See under Chemistry and Biochemistry)

Biology (Consult Departments of Botany and Zoology)
A programme in Biology is suggested for students who plan to work in the broad field of Biology rather than in a biological subdiscipline. A specialist programme in Biology is particularly appropriate for students planning careers in Biology teaching.
Recommended first-year preparation: BIO 100/120, CHM 120, MAT (other than MAT 100), PHY 140/130.
Second-year programme: Five courses, with at least one in Botany and one in Zoology recommended.
Third- and fourth year programmes: Five courses in each year, with a year total of at least two courses in each of Botany and Zoology recommended. Students are urged to choose some of their courses from such cognate fields as Organic Chemistry, Biochemistry, Microbiology.
Students are urged to take at least one of the two field courses, BIO 300 and BIO 301.

Biology and Mathematics (See under Mathematics and Biology)

Botany (Consult Department of Botany)
Recommended first-year preparation: BIO 100/120/BOT 100, CHM 120, MAT 130/135, PHY 130/140.
Second-year programme: BOT 210 & 240, CHM 235; Selection from other BOT and ZOO courses, MBL 220, PHY 230.
Third-year programme: Two of BOT 300, 320/321, 330, 341, and two selected from other BOT courses, ZOO courses, MBL courses, BCH 320/321, STA 232/242.
The total programme should include at least eight courses in BOT and BIO, and six in allied sciences and MAT.

Chemical Physics (Consult Departments of Physics and Chemistry)
Recommended first-year preparation: CHM 120, MAT 139/(140 & 150), PHY 120 or equivalent.
Second-year programme: CHM 220, 235, MAT 239, PHY 220, 221F.
Third-year programme: CHM 320, MAT 339, MAT 244F/APM 331F, PHY 300, 321Y.
Fourth-year programme: Three 400 series Physics/Chemistry courses with at least one chosen from Physics and one chosen from Chemistry.

Chemistry (Consult Department of Chemistry)
Recommended first-year preparation: CHM 120, MAT 135/139/(140 & 150), PHY 120/130.
Second-year programme: CHM 220, 235, MAT 235/239, PHY 220/230.
Third-year programme: CHM 320, 323S, 330, 340, one half-course in Chemistry/another science/Mathematics.
Fourth-year programme: Three 400 series courses in Chemistry; one course in Science/Mathematics.

Chemistry and Biochemistry (Consult Departments of Chemistry and Biochemistry—Faculty of Medicine)
Recommended first-year preparation: BIO 100/120, CHM 120, MAT 135/139, PHY 120/130.
Second-year programme: CHM 220, 235, MAT 235/239, PHY 220/230. (A BOT or ZOO course should be considered as a fifth course).
Third-year programme: BCH 320/321, 371, CHM 320/330, 340, 347S.
Fourth-year programme: Four courses in Biochemistry and/or Chemistry (mostly Organic) at least three of which should be 400 series.

Chemistry and Mathematics (See under Mathematics and Chemistry)

Chemistry (with Physics) (Consult Department of Chemistry)
Recommended first-year preparation: CHM 120, MAT 139/(140 & 150), PHY 120/130.
Second-year programme: CHM 220, 235, MAT 239, PHY 220.
Third-year programme: CHM 320, 323S, 330/340, MAT 339, PHY 221F/other Physics/MAT 244F/APM 331F.
Fourth-year programme: Two 400 series in Chemistry. One 300/400 series course in PHY, CHM 330/CHM 340/another 300/400 series PHY/CHM course.
Note: For a balanced training in Chemistry, a student should take each of CHM 320, 330, 340.

Computer Science-(Consult Professor D. Tsichritzis, Department of Mathematics)
A programme to prepare the student for professional or graduate work in Computer Science.
Recommended first-year preparation: MAT 139/(140 & 150), CSC 148F; CSC 158S, PHY 120 are suggested options.
Second-year programme: MAT (239 & 140)/(240F & 250), MAT 244F/APM 251, STA 242/252, CSC (258F & 248S); PHY 220 is a suggested option.
Third-year programme: MAT (339 & 345)/(330 & 340 & 350), APM 361F, CSC 368S, (CSC 258F in 1970-71 only); CSC 348F is a suggested option.
Fourth-year programme: CSC 438F, 448S, 458F, 468S; recommended options are APM 451F, 456S, 461F, 466S, MAT 464F.

Geology (Consult Department of Geology)
Recommended first-year preparation: CHM 120, GLG 120, MAT 134/135/139, CSC 148/108.
Other desirable science courses: AST 100, BIO 100/120, PHY 130/120.
Second-year programme: GLG 220 & 221Y, GLG 120 (if not taken previously), and three of BOT 220, CHM 220, CEN 617/CHM 235, MAT 230/234/235/239, PHY 220, 221F, (or 230), STA 232/242/252, ZOO 220, 250, 253.
Third-year programme: GLG 320 & 322 and at least one of GLG 324, 325.
Fourth-year programme: Four of GLG 420, 421, 422, 423, 424, 425, 426 427F, 428, 490, GLG 470/PHY 421Y, PHY (308 & 324Y), one full or two half Geology courses not taken in the Third Year.

Mathematical Studies (Consult Professor R. Wormleighton, Department of Mathematics)
This programme provides a broad training in mathematics without the special emphasis on analysis that is necessary for many graduate programmes in mathematics. It is excellent preparation for prospective mathematics teachers.
Recommended first-year preparation: MAT 139/(140 & 150); CSC 148F/148Y.
Second-year programme: MAT (140 & 239)/(240F & 250); MAT 245S; STA 242/252.
Third-year programme: MAT 340/345; two mathematics options.
Fourth-year programme: Five options.

Mathematics (Consult Professor R. Wormleighton, Department of Mathematics)
This programme is designed to prepare a student for graduate work in mathematics, applied mathematics, probability or statistics.
Recommended first-year preparation: MAT 140, 150; PHY 120.
Second-year programme: APM 251, MAT 240F, 245S, 250; STA 252.
Third-year programme: MAT 330, 340, 350.
Fourth-year programme: Five options.
Note: Any course may be deferred to a subsequent year subject to prerequisites and co-requisites and the approval of the Undergraduate Secretary of the Department. It is recommended that students acquire a reading knowledge of at least one of German and Russian.

Students wishing to specialize in statistics or probability should include MAT 454F in their options, as well as the courses offered in their field.

Mathematics and Biology (Consult Professor J.E. Paloheimo, Department of Zoology and Professor W.A. O'N. Waugh, Department of Mathematics)
This programme is designed to meet the increasing demand for mathematically oriented biologists.
Recommended first-year preparation: BIO 100/120/BOT 100, CHM 120, MAT 139/140 and 150, PHY 120/130/140.
Second-year programme: CHM 235, MAT 239, STA 242, ZOO 223/BOT 230/240
Third-year programme: MAT 244F & 300/319S, STA 332F & 342S, ZOO and/or BOT courses. courses.
Fourth-year programme: STA 482F (multivariate analysis), STA 497S (stochastic processes), ZOO 478F, 479S.

Mathematics and Chemistry (Consult Department of Chemistry and Department of Mathematics (Professor P. G. Norton))
This programme can lead to graduate work in either Chemistry or Mathematics.
Recommended first-year preparation: CHM 120, CSC 148Y, MAT 140 & 150, PHY 120.
Second-year programme: APM 251, CHM 220 & 235 & 323S, MAT 240F & 250. (PHY 220 is recommended as an extra subject.)
Third-year programme: CHM 320 & 422F & 423S, MAT 340 & 350.
Fourth-year programme: MAT 330, 1 ½ full courses from CHM 330, 340, 420, 424F, 425S, 429Y APM 351/421F.

Mathematics and Economics (Consult Professor W. Haque, Department of Mathematics)
This programme provides a firm mathematical foundation for subsequent work in Economics.
Recommended first-year preparation: MAT 139/(140 & 150); ECO 100.
Second-year programme: MAT(140 & 239)/(240F & 250); MAT 244F/APM 251; STA 252; ECO (240F & 241S).
Third- and Fourth-year programme: MAT 339/350; APM (451F & 456S); ECO 332; at least four additional full courses in Economics and/or Mathematics.

Mathematics and Linguistics (Consult Professor B. Brainerd, Department of Mathematics)
A programme for students interested in the application of mathematics to the study of the structure of language.
Recommended first-year preparation: MAT 134/135/139/(140 & 150); CSC 148; JAL 100.
Second-year programme: MAT (225 & 234)/(240F & 250); STA 242/252; LIN 230.
Third-year programme: (LIN 333/(228F & 229S)); STA 342/352.
Note: Students in the second year of this programme in 1970-71 should take LIN 333 or LIN 228F and 229S in the second year and LIN 231 in the third year instead of taking these courses in the recommended order.
Fourth-year programme: LIN 450/491; MAT 409S; an additional course in mathematics.
Note: During the four years, the student should also have taken LIN 201/JAL 300 and also one of ANT 220, LIN 348 or a spoken indoeuropean language.

Mathematics and Philosophy (Consult Professor F. Tall, Department of Mathematics and Professor A. Rosenthal, Department of Philosophy)
This programme is designed to emphasize those aspects of each discipline which are of particular interest to the other both historically and currently.
Recommended first-year preparation: MAT (140 & 150)/(139 & 225); PHL 100.

Second-year programme: MAT 224S, MAT 245S/325, MAT 239/(240F & 250); PHL (206F & 213F & 214S).
Third-year programme: MAT 340/345; STA 242/252; PHL 314F and two of PHL 315S, 317S, 327F, 328F, 329S, 330S, 331S.
Fourth-year programme: MAT 404F; PHL 408F/S.

Mathematics and Physics (Consult Department of Physics and Professor D. Masson, Department of Mathematics)
This is a strong combined programme that includes the physics core with additional mathematics and demonstrates the strong interaction of the two disciplines.
Recommended first-year preparation: MAT (140 & 150); PHY 120.
Second-year programme: MAT (240F & 250); APM 251; PHY (220 & 222S).
Third-year programme: MAT (330 & 350); APM 351; PHY (300 & 302).
Fourth-year programme: MAT 340; PHY 400/APM 421F.

Mathematics for Teaching (Consult Professor K. O. May, Department of Mathematics)
A programme to provide a deep understanding of elementary mathematics and a broad view of the subject and its applications. The first three years of the programme should include at least six full courses from the following:
MAT 100, 220, 320, first year calculus, second year calculus;
MAT 140/225, 245S/325, 314F, 410, 414F, 224S;
APM 331F, 336S; STA 232; CSC 108.
Note: Courses in History, Philosophy and Psychology are suggested for inclusion in the whole programme. Any of the other specialist programmes in mathematics or mathematics combined with another subject is also an excellent preparation for teaching.

Physics (Consult Department of Physics)
Recommended first-year preparation: PHY 120 or equivalent, MAT 139/(140 & 150).
Second-year programme: PHY 220, 221F, 222S, MAT 239, 244F, APM 246S.
Third-year preparation: PHY 300, 302, 303F, MAT 339, APM 331F, one of PHY 320, 321Y, 322, 323Y.
Fourth-year programme: Any three 400 series Physics courses.

Physiology (Consult Department of Physiology–Faculty of Medicine)
Recommended first-year preparation: CHM 120, BIO 100/120, MAT 130/135/139/150, PHY 120/130/140.
Second-year programme: ANA 200/ZOO (250 & 251), CHM 235, STA 232.
Third-year programme: PSL (322 & 373Y), BCH (320 & 370Y)/(321 & 371Y), ZOO 211.
Fourth-year programme: At least three of: PSL 424, 427, 429S, 430, 475F, 498, ZOO 441Y, 442Y, 440.

Psychology (Consult Department of Psychology)
The programme requires a minimum of seven courses (or equivalent in half courses) including PSY 200 & 201; one of PSY 320, 321, 322; and PSY 400.
Recommended first-year preparation: PSY 100.
Second-year programme: Suggested: PSY 200F and PSY 201S.
Third-year programme: Normally: PSY 320/321/322.
Fourth-year programme: PSY 400.

Psychology and Physiology (Consult Departments of Psychology, and Physiology–Faculty of Medicine)
Recommended first-year preparation: BIO 100/120, CHM 120, MAT 130/135, PSY 100.
Second-year programme: PSY (200 & 201)/STA 232/242, ANA 200/ZOO (250 & 251), CHM 235, PHY 140 (if not taken in first year).
Third-year programme: BCH 321, PSL (322 & 373Y), two of PSY (208F & 314S), (206F & 313S), (221F & 332S).
Fourth-year programme: PHM 470/PSL 424/427/ZOO (441Y & 442Y), two of PSY 316S, 317F, 319S; PSL 498/PSY 400; one "Advanced Topics" seminar in Psychology.

Zoology (Consult Department of Zoology)
There is no prescribed programme for students specializing in Zoology, and such students also may enrol in any course offered by the Department. However, students who wish to specialize and to prepare for a career in Zoology are advised to build their programme along the following lines:
Recommended first-year preparation: BIO 100/120, CHM 120, PHY 120/130/140, and a first-year Mathematics course other than MAT 100.
Second-year programme: CHM 235, STA 232/242, and three of ZOO 220, 221, 222, 223, 224, 226. Students are advised to take BIO 300 (Terrestrial and Freshwater Biology Field Course) at the end of second year.
Third-year programme: A selection from ZOO 225, and any other 200-series courses. Students may take one or more 400-series course(s) in their third year. Students are advised to take BIO 301 (Marine Biology Field Course) at the end of the third year.
Fourth-year programme: A selection from 200- and 400-series courses.

B.COM. PROGRAMME
(St. George Campus)

Commerce and Finance (Consult Department of Political Economy)
The Commerce and Finance Programme begins formally in second year and leads to the degree of Bachelor of Commerce on successful completion of the fourth year. In each year of the Programme the student is required to take six courses of which one is a free option that he may choose as he wishes.
Students wishing to enter this Programme should enrol with the Department of Political Economy at the beginning of their second and subsequent years.
Recommended first-year preparation: COM 100 & 101, ECO 102, MAT 130/134.
Note: Students without this preparation can enter the second year of this Programme but will find themselves handicapped in their choice of subjects in higher years.
Second-year programme:
COM 220 (or COM 100 if neither COM 100 nor 101 was taken in first year).
ECO 200/(240F & 241S)
ACT 223F & 233S or alternative second-year course approved by Supervisor of Studies.
ECO 220/STA 232
One of COM 300*, MAT 234, ECO 101, 202 (204F & 205S), (240F & 241S), 221, 222.
One course other than COM or ECO.
*If space is available after third-year students have been accommodated.
Notes: (1) Students taking ECO 240F & 241S cannot take ECO 200 or 202 for credit.
(2) Students planning graduate studies in Economic Theory or Management Sciences are advised to take MAT 234 & STA 232.

Third-year programme:

Two of COM 220*, 300, 320, 400, 401, 420, 422, 424
One of ECO 221, 222, or any ECO course in the 300-series, MAT 234, STA 342.
One of ECO 202, (204F and 205S), or any ECO course in the preceding group.
One other third-year course in COM or ECO
*COM 220 is to be included if not taken in the Second Year.

Notes: (1) ECO 202 *or* (204F and 205S) *or* (240F and 241S and 332), and, ECO 220 or STA 232, and, at least one of ECO 101 *or* 338, 221, 322 must be completed before the end of this year.

(2) Many of the courses listed here have prerequisites, and students should check the Course Descriptions where prerequisites and co-requisites are listed.

Fourth-year programme:

COM 421; Four courses in COM and ECO selected from the 300- and 400-series including at least one in COM and one in ECO
One course other than COM or ECO.

PREPARATION FOR STUDY IN PROFESSIONAL FACULTIES, SCHOOLS OR COLLEGES

Students who enter the Faculty of Arts and Science in order to qualify for later admission to a Professional Faculty or School such as Dentistry, Law, Library Science, Medicine, Social Work, are advised to consult the appropriate Faculty or School before devising their programme of study. Students seeking entrance to a College of Education with a view to obtaining a specialist teaching certificate should consult the Faculty's Department of their proposed specialty and the College of Education regarding requirements.

Students may now satisfy the admission requirements of the Faculty of Medicine by completing a two-year programme in the Faculty of Arts and Science which includes BIO 100/120, CHM 120 & 235, MAT 130/134/135/150, PHY 120/130/140. Other courses should be chosen according to the student's interests.

INTERDISCIPLINARY STUDIES

PROGRAMMES

The New Programme has, as one of its main objectives, the encouragement of interdisciplinary study. Students are able to build their own programmes, involving all degrees of specialization and such specialization may follow Departmental programmes or combine different disciplines. Some attractive combinations have long existed in this Faculty, and they are still available. However, the current tendency in graduate studies at this and other universities towards interdisciplinary Centres and Institutes, many with an emphasis on the Social Sciences, indicates the increasing value and importance of similar studies at the undergraduate level. The following suggestions indicate some combinations of courses which might be made to create interesting interdisciplinary programmes. In planning their programmes students will need to take careful note of prerequisites and corequisites. Advice should be sought from College Registrars and advisers in the appropriate departments.

Asian Studies The basis of a programme in this area will of course be the offerings of the Department of East Asian Studies in Language, Literature, History and Philosophy. Suitable and pertinent courses are also given by the Departments of Anthropology, Fine Art, Geography, History, Political Economy, and Sociology.

Canadian Studies For this, as for all studies devoted to an overall view of human life in a particular region of the globe, a broad awareness of historical, geographical, intellectual, political, and social issues is a necessary background; students are consequently advised to acquire this background in their First Year, before proceeding to the more specialized programmes of study. Interested students should consult with the Departments of Anthropology, English, Fine Art, French, Geography, History, Political Economy, and Sociology.

Dramatic Literature The various language and literature departments give a large number of courses devoted exclusively or partially to the drama. In most cases the works are studied in the original languages, but drama in translation is available in many departments. Further information and advice may be obtained from the Centre for the Study of Drama, Massey College, and from the Departments of Classics, East Asian Studies, English, French, German, Italian and Hispanic Studies, Music, and Slavic Languages and Literatures.

Environmental Studies Man's increasing concern with his environment has led in recent years to the development of environmental studies as almost a separate discipline. As will be seen later a special interdisciplinary sequence has been established in this area, and students may well wish to combine it with various courses in the Natural Sciences, Life Sciences, and Social Sciences: Anthropology, Biochemistry, Botany (Ecology), Chemistry (Organic), Economics, Geography, Geology, Political Science, Sociology, Zoology (Ecology, Limnology).

Industrial Relations Again, students should acquire a good grounding in the relevant disciplines before seeking to specialize in their upper years. Commerce, Economics, History, Psychology, and Sociology are the basic subjects involved; further information and advice may be obtained from the Centre for Industrial Relations, 123 St. George Street.

Modern International Studies The Faculty of Arts and Science offers a large number of courses primarily concerned with study, both comparative and individual, of contemporary nations and cultures. These courses range over the modern history, the government and politics, the economics, the social structures, and the literary and artistic creations of most of the world. The following suggestions indicate some of the ways in which such courses can be grouped to provide coherent programmes of different kinds. Students should note that it is advisable to have a basic grounding in the Social Sciences; for this reason they are advised to include some of Anthropology, Economics, History, Political Science, and Sociology in their First and Second Years.

(a) *Western European Studies* The basic component of this programme would be specialization in one of the national literatures, combined with a selection of appropriate courses in Economics,

Fine Art, Geography, History, Music, Philosophy, Political Science, Religious Studies and Sociology.

(b) *Latin American Studies* This interdisciplinary programme for specialists which brings together the departments of Anthropology, Geography, History, Italian and Hispanic Studies, Political Economy and Sociology is designed as an introduction to the culture and civilization of the two hundred million inhabitants of Mexico, Central and South America who speak Spanish and Portuguese. It combines flexibility and breadth of scope with possible specialization and preparation for advanced studies in the Latin American area.

The Programme provides a thorough grounding in the Spanish and Portuguese languages (one being begun in the first year of the Programme, the other in the third), and offers a panoramic view of the literatures written in them, both Peninsular and American (a mature understanding of the Hispanic past being indispensable for an intelligent appreciation of the American present). It focuses attention on Latin America's historical development and geographical organization, its human and social patterns, as well as its economic and political institutions. The Programme is intended to prepare students for the diplomatic service and other government agencies, international in scope, as well as for positions in university teaching and in industry.

Since some direct contact with the Latin American contemporary scene is not only desirable but indeed essential to a meaningful programme of this kind, students are encouraged to spend the third year of the Programme studying at a university in Latin America. A further living link with Latin America is provided through the annual rotating appointment of a distinguished scholar from Latin America ("Latin American in Residence") in one of the six departments which form the programme.

The interdisciplinary nature of the Latin American Studies Programme makes consultation imperative. It is suggested, therefore, that before enrolling, students discuss the focus and overall pattern of their proposed studies with the Chairman of the Latin American Studies Programme or with a Counsellor designated by him. Students are urged furthermore to discuss their choice of courses with the departments concerned.

(c) *Soviet and East-European Studies* This increasingly crucial area of study has as its core the offerings in language and literature of the Department of Slavic Languages and Literatures, in combination with the many suitable courses in History and Political Science. The Departments of Political Economy, Geography, and Philosophy also offer courses pertinent to this area. The Centre for Russian and East European Studies, Sidney Smith Hall, will provide more information.

(d) *African Studies* A programme in this comparatively new area of study will be composed primarily of courses in Anthropology and Political Science, supplemented by work in Economics and Sociology. Both the English and French Departments offer special Inter-College Options devoted to the literature of Black Africa. Further information is available from the Department of Political Economy.

(e) *International Relations* The impinging of national states upon each other's rights, prerogatives, and sovereignty, the notions of spheres of influence and balance of power, the problems of economic and cultural domination and of foreign aid are some of the issues which form the core of many courses in Economics, History, and Political Science. Other relevant courses are offered by Islamic Studies, Philosophy, and Religious Studies.

(f) *Development Studies* A number of courses in a variety of disciplines deal with aspects of the processes of economic, social, and political development. Some of these may be seen as background preparation; some are specialized in their subject matter; others may be grouped according to geographical areas. Anthropology, Economics, Geography, Political Science, Psychology, and Sociology provide the essential background, and are joined by East Asian Studies and History in offering more specialized courses. More information may be obtained from the Department of Political Economy.

Urban Studies Rapidly increasing awareness of the problems man has created for himself by choosing to live in cities has made this area of study crucial. Economics, Geography, Political Sci-

ence, and Sociology are the disciplines most particularly concerned, and pertinent courses are available from the 100-level right through the 400-level. Further information may be obtained from the Centre for Urban and Community Studies, 150 St. George Street.

INTERDISCIPLINARY COURSES AND SEQUENCES

The desire to keep the boundaries of the traditional disciplines flexible has led to experimentation with interdisciplinary approaches to knowledge and the establishment of some individual courses which combine the knowledge and techniques of several of the traditional branches of study. History and Anthropology are collaborating on a course entitled "Peasants and Feudal Institutions" (HIS 324), and many courses in Religious Studies, such as "Religious Dimensions of Human Behaviour" (REL 317), are interdisciplinary in their approach.

Under the designation CIN 201-205 Innis College offers a series of five experimental courses of an interdisciplinary nature. The focus of these courses is clearly the contemporary world and its problems, preoccupations, organization, art, and thought, and the exploratory nature of the subject matter will have as its natural concomitant experimental methods of teaching. Although primarily for students registered in Innis College, CIN 201-205 are also available to a limited number of students in other Colleges and Faculties on request to the College Academic Co-ordinator.

In addition to the foregoing programmes and courses, sequences consisting of new interdisciplinary courses are being developed under the general title of "Faculty Studies". In 1969-70 "Environmental Studies" (FSE), "Modernization and Community" (FSM), "Revolutions" (FSR), and "Theory, Method, and Practice" (FST) were initiated as 200-series courses ("Revolutions," also had a 100-series course) and for 1970-71 a 300-series course has been added wherever possible. As well, a new sequence, "Communications" (FSC), has been created and will develop in the same way as the previous four. "Revolutions," incidentally, has been restructured so as to begin at the 200-level; in 1970-71 a 400-series course will be offered in addition to the 200- and 300-series courses in this sequence.

"Communications," as its title suggests, is concerned with the transfer of all types of information, between individuals and between groups of individuals. The implications of electronic communication will occupy only a secondary role, as the focus of the sequence will be on the efforts of humans to communicate with each other in the realms of logic, art, gesture, propaganda, etc. The ultimate goal of the sequence will be to analyze the contemporary problem of alienation and communication failure.

"Environmental Studies," as indicated above, will present the problems deriving from the interactions between living organisms and their external milieu, problems that have been emerging with ever-greater urgency as populations grow and technology develops. It will include, therefore, concerns ranging from ecology to public policy.

"Modernization and Community" is designed to explore two central aspects of modern society: disruptive social changes and their relation to the cohesion of human communities. A variety of approaches, with an emphasis on historical, sociological, and geographical considerations, will be united in a study of the ways in which such social changes as urbanization, industrialization, and bureaucracy have transformed the traditional community.

"Revolutions" is predicated on the assumption that contemporary Western civilization may be at a moral, intellectual, social, and political turning-point. By investigating the causes, effects, and inner workings of the revolutions, both violent and tranquil, which from ancient times to the present have altered the course of Western civilization, the sequence aims at acquiring the requisite knowledge and understanding for an informed analysis of the contemporary situation.

"Theory, Method, and Practice," like the other sequences, will be particularly demanding and challenging. Its focus will be on the ways in which man assimilates information, forms concepts and theories, develops methods of solving problems and organizing knowledge, and moves on to

practical applications. It will thus, by involving Science, Social Science, and Humanities disciplines, range from epistemology to the implementation of policies.

Each of these sequences will present to students an opportunity to investigate key problems in depth over a period of years. For some this will be an opportunity to broaden their range beyond a specialized study in a related area; for others, it will be an opportunity to develop a core study that will unite other studies. Further information about these sequences may be obtained from the faculty members in charge of each. Students should note that these will be demanding courses involving a knowledge of, and not merely an acquaintance with, the relevant disciplines, and that it will probably be necessary to limit enrolment in each of them.

THIRD YEAR EXCHANGE PROGRAMME AND STUDY ELSEWHERE

Smith College Exchange Programme

For many years a student-for-student exchange programme has existed between Smith College, Northampton, Massachusetts and the Faculty of Arts and Science, whereby girls who have completed their Second Year in a four-year programme may spend their Third Year at Smith. In order to be considered for participation in the exchange a student must:

(1) Submit a petition through her College Registrar before February 15.
(2) Obtain the approval of the Dean of Women in her College.
(3) Obtain the approval of the appropriate departments here of her proposed programme at Smith, in order to be assured of its acceptance for entry to the Fourth Year here.
(4) Obtain at least Grade B or equivalent standing in the Second Year.
(5) Submit a request for financial assistance if such aid is required.

If an applicant is approved, she must pay to Smith College the full fees and residence dues of that College. Financial assistance by Smith College up to the amount of $2,300 will be considered for qualified applicants on completion of an application for an in-course award. This should be submitted to the Secretary of the Faculty by February 15.

A calendar of Smith College and additional information concerning the Exchange are available at the Faculty Office.

Study Elsewhere

It has been possible in the past for students in certain honour courses such as Fine Art, French Language and Literature, Latin American Studies, Modern History and Modern Languages, and Modern Languages and Literatures to spend their Third Year in another country or at another Canadian university. Students wishing to spend the Third Year of the New Programme elsewhere should obtain from their College Registrar a special application form and consult the appropriate departments early in the session. This form must be completed and submitted to the Faculty Office by February 15.

Before proceeding abroad, such students must register and pay the prescribed fee. Students are expected to return to the University of Toronto for the final year for the degree.

COURSE DESCRIPTIONS

Note: In order to preserve the quality of instruction in the Faculty it may be necessary for departments to restrict enrolment in certain courses (especially seminars) by giving preference to those students who, in the judgment of the department or the professors, have the best qualifications.

KEY TO COURSE DESCRIPTIONS

Under each teaching department, courses are listed with their identifying three-letter code and three-digit number, e.g., ANT 100—Anthropology 100. The J prefix (e.g., JAH 324) indicates a course given jointly by members of two departments (in this case Anthropology and History), and the FS prefix (e.g., FST 200) indicates an interdisciplinary course sponsored by the Faculty. If there is no suffix after the course number, the course is a full course given throughout the whole academic year (September to May). A suffix indicates a half-course:

F – a half-course given in the First (Fall) Term only.
S – a half-course given in the Second (Spring) Term only.
Y – a half-course given continuously throughout the whole academic year.

After the short title of the course the number of equivalent hours of formal instruction per week is given. For example:

3L	indicates three hours of lecture or lecture-discussion groups per week
½T	indicates a tutorial, seminar or small-group hour every other week
2P	indicates two hours per week for practical work in laboratories, language laboratories, studios, etc.
ARR	indicates that the details are to be arranged between the student and the department concerned.

Where applicable, the course description is followed by a list of those other courses with which the course in question may not be combined in a degree programme because of similarity of content; and finally by the prerequisites and co-requisites for the course. Generally speaking, the courses listed refer to the course codes and numbers both of this calendar and also of the 1969-70 calendar; specific reference to courses in the 1969-70 calendar is indicated by a dagger (†). Students who wish courses, other than those stated, to be considered as equivalent prerequisite or co-requisite preparation should consult the departments concerned.

The solidus symbol (/) means OR
The comma (,) or the ampersand symbol (&) means AND

Note: No two of the following courses may be combined in any degree programme:
ANT 451, ECO 220, GGR 270, GLG 221Y, POL 206, PSY (200F and 201S), SOC 201, STA 232, 242, 252.

ACCOUNTING

See "Political Economy–Commerce"

ACTUARIAL SCIENCE

See "Mathematics"

AKKADIAN

See "Near Eastern Studies"

ANATOMY

See "Medicine"

ANTHROPOLOGY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

ANT 100 **Introduction to Anthropology** 2L,
An introduction to the Department and subject, stressing the unity and diversity of anthropology. In proceeding through the origins and development of homo sapiens and the living populations, the growth, diversity and structure of societies, cultures and languages, this course will cover all fields of anthropology. These are, in order of presentation, physical anthropology, archaeology, social and cultural anthropology and linguistics.

JAL 100 **Introduction to General Linguistics** 2L,1T
A general introduction to linguistics with main emphasis on descriptive linguistics. (See also under Linguistics.)

ANT 150 **Human Adaptability and World Regions** 2L,1T
This course will encompass the study of two or more major world areas in which concentration is placed upon regional cultures, their communities, their languages and their populations considered genetically. Regions will be drawn from the following: the Americas, Africa, Asia, Europe and Oceania. Emphasis will be placed on the pre-contact and contact-changing peoples.

ANT 222 **Introduction to the Study of Canadian Indian Languages** 2L,1T
Prerequisite: A fluent knowledge of a Canadian Indian Language.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

ANT 201 **North American Prehistory** 2L,1T
An intensive survey course of North American history from the time of man's entry into the New World to the historic period. Major prehistory culture areas will be presented with representative archaeological sites being discussed in depth. Major theories and approaches will be demonstrated through the medium of such study.

ANT 203 **Introduction to Physical Anthropology** 2L,1P
An introduction to physical anthropology and human biology. The study of human evolution, viewed against the background of primate evolution, in past and present populations of man, paying particular regard to the genetical aspects of evolution. A comprehensive laboratory course is offered in conjunction with the lectures.

ANT 204 **Social and Cultural Anthropology** 2L,1T
The study of social organization and structure including belief systems, kinship and marriage, politics and ecology.

ANT 220 **Languages of the World** 3L
A survey of the languages of the world, and of the groups and subgroups into which they are classified. A discussion of linguistic structures and of the methods of language classification. This course covers the domains of linguistic geography and language typology, and provides a background in linguistics for students of anthropology.

ANT 241 **North American Indian in Transition** 2L,1T
A discussion of the established culture areas and types existing in precontact and early contact times in North America followed by an analysis of the problems arising out of contacts between North American Indians and Euroamericans.

COURSES OPEN TO THIRD-AND HIGHER-YEAR STUDENTS

JAL 300 **Sociolinguistics** 2L
(See also under Linguistics)

ANT 310 **Palaeolithic and Neolithic Archaeology** 2L,1T
(Not offered 1970-71).

ANT 311F **Archaeological Field Work** 1L,2P

ANT 312S **Archaeological Laboratory Analysis** 2P

ANT 313S **Archaeological Interpretation** 1L,2T
Prerequisite or co-requisite: ANT 311F/312S or equivalent

JAH 324 **Peasants and Feudal Institutions** 1L,2T
A comparative study of medieval European and other historical and contemporary peasant societies with reference to the development of various social, economic and political institutions, including military feudalism. (See also under History.)

ANT 330F **Human Biology** 3P

ANT 331 **Problems in Human Evolution** 3P
Prerequisite: ANT 330F (or †ANT 337) or instructor's permission

ANT 332F **Human Origins and Adaptations** 1L,2P
The evolution from pre-hominid to hominid stage including the accompanying adaptations that are associated with each stage.
Prerequisite: ANT 203 or instructor's permission

ANT 333 **Primate Behaviour** 2L,1P
A general review of primate behaviour in its ecological setting.
Prerequisite: ANT 203 or instructor's permission

ANT 340 **Political Anthropology** 1L,1T
Prerequisite: ANT 204 or instructor's permission

ANT 341 **Anthropology of Religion** 2L
Prerequisite: ANT 204 or instructor's permission

ANT 342 **Art of Oceania, Africa and North America** 2L

JAP 343 **Africa in Transition** (See also under Political Science) 1L,1T
Prerequisite: ANT 204 or instructor's permission

ANT 344 **Peoples and Cultures of Southeast Asia** 2T
Prerequisite: ANT 220 (or †ANT 240) or instructor's permission

COURSES OPEN TO FOURTH-YEAR STUDENTS

ANT 410F **Seminar in Archaeological Theory I** 2T
Prerequisite: One archaeology course

ANT 411S **Seminar in Archaeological Theory II** 2T
Prerequisite: One archaeology course

ANT 412F **Archaeology of the Arctic** 1L,2T
Prerequisite: One archaeology course

ANT 413S **Archaeology of Southwestern North America** 1L,2T
Prerequisite: One archaeology course

ANT 414F **Advanced Regional Archaeology** 1L,2T
Prerequisite: One archaeology course

ANT 415S **Archaeology of Southeastern North America** 1L,2T
Prerequisite: One archaeology course

ANT 420 **Language and Culture** 2L
Prerequisite: ANT 220/JAL 100/300 (or †ANT 240/†LIN 100)

ANT 421 **Problems in Phonology** Arranged
Prerequisite: Instructor's permission

ANT 422 **Advanced Topics in Linguistics** Arranged
Prerequisite: Instructor's permission

ANT 430 **Special Problems in Physical Anthropology** Arranged
Original research in physical anthropology under the personal supervision of an instructor.
Prerequisite: Instructor's permission

ANT 431 **Human Growth, Development and Constitution** Arranged

ZOO 421F **Human Genetics** 1L,3P
Prerequisite: Instructor's permission

ANT 433 **Primate Biology** 1L,3P
Primate anatomy with dissection and selected topics in primate biology.
Prerequisite: ANT 333 (or †ANT 336) or instructor's permission.

ANT 434 **Human Osteology** 3P
Methodology and analysis of prehistoric skeletal populations.
Prerequisite: ANT 203 or instructor's permission

ANT 435S **Advanced Human Biology** 3P
Prerequisite: ANT 330F (or †ANT 337)

ANT 440 **Social Change** 2L,1T
Prerequisite: ANT 204 or instructor's permission

ANT 441 **Ecology and Economic Anthropology** 2L,1T
Prerequisite: ANT 204 or instructor's permission

ANT 442 **Culture and Communication** 2L,1T
Prerequisite: ANT 204 or instructor's permission

ANT 443 **People and Cultures of Latin America and the Caribbean** 2L
Prerequisite: ANT 204 or instructor's permission

ANT 444 **Urban Fieldwork: Seminar and Practice** 2L
Prerequisite: ANT 204 or instructor's permission

ANT 450 **Departmental Seminar II** 2L
Prerequisite: Instructor's permission

ANT 451 **Statistics for Anthropologists** Arranged
Prerequisite: Instructor's permission

APPLIED MATHEMATICS

See "Mathematics"

ARABIC

See "Islamic Studies"

ARAMAIC

See "Near Eastern Studies"

ASTRONOMY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

AST 100 **Introduction to Astronomy** 2L,1P

A general survey of astronomy giving a descriptive treatment of the nature of solar and sidereal systems and the present conception of the structure of the universe. This course is intended for students *not* specializing in science.
(May not be combined with AST 200F/220 in any degree programme.)

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

AST 200F **Astronomy** 2L

A topical course in astronomy designed for specialists in disciplines other than the sciences. The emphasis will be on fields of current interest in astronomy with the aim of interpreting recent and forthcoming developments.
(May not be combined with AST 100/220 in any degree programme.)

AST 220 **General Astronomy** 2L,1P

A survey course in astronomy intended for specialists in science in the Second or higher years. Emphasis is placed on current developments and on the application of basic physics to astronomical problems. Although the course is complete in itself as a survey of astronomy, it is also a good preparation for AST 300 and/or AST 400.
(May not be combined with AST 100/200F in any degree programme.)
Prerequisite: PHY 120/130/140 (or †PHY 135)

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

AST 300 **Astronomy and Astrophysics** 2L

A course in which a variety of fields of current astronomical interest are discussed. Topics include the spherical astronomy, planetary physics, the Galaxy, and extragalactic systems.
Recommended Preparation: (PHY 230 & MAT 230) or the Physics Specialist Programme in the Second Year.

AST 310Y **Practical Astronomy** 2P

A half course consisting of one or more projects involving experimental work with telescopes and other astronomical equipment.
Co-requisite: AST 300

COURSES OPEN TO FOURTH-YEAR STUDENTS

AST 400 **Astrophysics** 2L

The application of physics to the study of stellar atmospheres, stellar interiors, and interstellar matter.
Recommended Preparation: AST 300/220

AST 410Y **Research Topic In Astronomy**
A half course consisting of a research report by the student in consultation with an individual staff member in the department. Students must enrol with the undergraduate secretary of the department.
Co-requisite: AST 400

BIOCHEMISTRY

See "Medicine"

BIOLOGY

Given by the Staff of the Departments of Botany and Zoology

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

BIO 100 **Principles of Biology** 2L,½T,3P
An introductory biology course emphasizing the role of physical and chemical principles in life processes. Lectures and laboratories will stress organization and metabolism of cells and organism including nutrients, energy cycles and physiological regulation. Genetic mechanisms, reproduction and evolution of plants and animals will also be considered.

BIO 120 **Evolutionary and Environmental Biology** 2L,3P
A biology course relating the study of plants and animals to evolution. Lectures and laboratories will consider briefly the origin of life and cellular processes, and will stress genetic mechanisms, adaptations of plants and animals, populations, ecological systems, and man in his environment. Intended primarily for students with Grade XIII Biology.
Prerequisite: None (XIII BIO recommended.)

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

Field Courses In Biology

The following courses are designed to provide field experience for students specializing in Botany and/or Zoology, including those students who intend to become biology teachers. BIO 300 is especially relevant to the latter group. These courses are given in the three-week period before the beginning of the fall term and normally would be taken by students entering their Third and/or Fourth Years. The cost of each course, including board and lodging, is not expected to exceed $75. Enrolment is limited. Further information may be obtained from the Departments of Botany and Zoology.

BIO 300 **Terrestrial and Freshwater Biology** Arranged
This course will be offered at the Ontario Forest Technical School near Dorset, Ontario. Emphasis will be on principles and methods in plant and animal ecology, and gaining familiarity with local flora and fauna. Terrestrial and freshwater ecosystems will be studied. Opportunity will be provided for students to undertake projects of their own.
Prerequisite: BIO 100/120.

BIO 301 **Marine Biology** Arranged
A field course in Marine Biology, in St.Andrews, New Brunswick, consisting of informal lectures and seminars with intensive field and laboratory work. Different marine habitats are examined in detail and the animals and plants associated with them are classified. Students carry out projects in which they are encouraged to develop their own ideas and interests. Lectures on special topics are given by the scientific staff of the Biological Station.
Prerequisite: BIO 100/120

BOTANY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

BIO 100 **Principles of Biology** 2L,½T,3P
See description under "Biology."

BIO 120 **Evolutionary and Environmental Biology** 2L,3P
See description under "Biology."
Prerequisite: None (XIII BIO recommended.)

BOT 100 **Introduction to Plant Biology** 2L,3P
A basic botany course covering such topics as the structure, function, reproduction and uses of plants. Lectures and laboratories will also include a survey of the major plant groups.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

BOT 200 **Biology of Lower Plants** 2L,3P
A lecture and laboratory course dealing mainly with the algae and fungi, their biology and importance to man. Laboratory work is largely experimental, and includes the isolation of pure cultures, studies of growth and nutrition and the production of antibiotics and enzymes.
Prerequisite: None (BIO 100/120 recommended.)

BOT 210 **Morphology and Evolution in the Plant Kingdom** 2L,3P
A lecture and laboratory course on living and fossil representatives of the major plant groups, with emphasis on morphology, anatomy and evolution.
Prerequisite: None (BIO 100/200 recommended.)

BOT 230 **Plant Environment and Variation** 2L,3P
A course dealing with the effects of environment on plants. Emphasis will be placed on genetic variability and its relation to adaptation, evolution and distribution (some field work will be included.)
Prerequisite: None (BIO 100/120 recommended.)

BOT 240 **Introductory Cell Biology** 2L,3P
The study of molecular and biological architecture and function of cells and their organelles.
Prerequisite: None (BIO 100/120 recommended.)

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

BOT 300 **Systematic Botany** 2L,2P
An introduction to the flora of Ontario including a consideration of the more important families of vascular plants.

BOT 301 **General Mycology** 2L,3T
A survey of various fungi, their morphology, life history, distribution, and significance to man.
Prerequisite: None (BOT 200 (or †BOT 221) recommended.)

BOT 302 **Phycology** 1L,1T,3P
Comparative morphology, classification and life cycles of algae. Physiological and biochemical aspects of growth and metabolism, and the ecology of marine and fresh-water algae.
Prerequisite: None (BOT 210 (or †BOT 220) recommended.)

BOT 320 **Plant Physiology and Biochemistry** 2L,3P
A basic course on the biochemistry, metabolism, growth, development and general physiology of plants.
(May not be combined with BOT 321 (or †BOT 371) in any degree programme.)
Prerequisite: None (BIO 100/120 or BOT 100 recommended.)

BOT 321 **Plant Physiology and Biochemistry** 1½L,½T,3P
A course on the metabolism and physiology of plants, for which a background knowledge of Biochemistry is required, stressing metabolism and regulatory mechanisms characteristic of plants, physiological mechanisms in the cell and the plant, regulation of growth and development by hormones and light.
(May not be combined with BOT 320 (or †BOT 311) in any degree programme.)
Prerequisite: CHM 235 (or †CHM 221)
Co-requisite: BCH 320/321

BOT 330 **Plant Ecology** 2L,3P
A lecture and laboratory course dealing with the interrelations of plants with the environment. Both terrestrial and aquatic habitats will be considered.

BOT 340 **Plant Structure and Development** 2L,3P
A lecture and laboratory course dealing with the structure and development of the cells, tissues and organs of vascular plants.
Prerequisite: None (BOT 210 (or †BOT 220) recommended.)

BOT 341 **Cytogenetics** 2L,3P
A lecture and laboratory course on the cytogenetics of variation and evolution in plants and animals.
Prerequisite: None (BOT 240 (or †BOT 223) recommended.)

JBM 350 **General Virology** 1L,3P
The course will consist of a series of lectures and laboratories to provide an introduction to the study of viruses. The lectures will cover fundamental and applied aspects of the viruses of animals, plants and bacteria. The laboratory will provide instruction in

basic techniques used in the study of viruses.
Prerequisite: None (MBL 220/BOT 240 (or †BOT 223) recommended.)
Co-requisite: MBL 322Y

BOT 351 **Plant Pathology** 1L,1T,3P
A lecture and laboratory course on the diseases of plants.
Prerequisite: None (BOT 200 (or †BOT 221) recommended.)

BIO 300 **Terrestrial and Freshwater Biology** (See Biology)

BIO 300 **Terrestrial and Freshwater Biology** (See Biology)

BIO 301 **Marine Biology** (See Biology)
Staff of Botany and Zoology.

COURSES OPEN TO FOURTH-YEAR STUDENTS

BOT 400 **Biosystematics** 2L,2P
A lecture and laboratory course dealing with speciation in organisms and with current uses of cytological and biochemical techniques in taxonomy.
Prerequisiste: None (BOT 300 (or †BOT 373) recommended.)

BOT 401 **Advanced Mycology** 5 hrs. by arrangement
A seminar and laboratory course in which students deal with individual topics and pursue special projects in Mycology.
Prerequisite: None (BOT 301 (or †BOT 473) recommended.)

BOT 402 **Bryology** 1T,3P
The ecological and geographic distribution, morphology, taxonomy and identification of mosses and hepatics.

BOT 420 **Growth and Development of Plants** 1L,½T,2½P
An advanced course on metabolic patterns in development, hormonal control of growth and development, influence of light in relation to phytochrome and high energy reactions, and the role of these factors in the morphogenesis and induction of flowering. Seminar and practical work in common with BOT 421. Practical consists of 3 hr. laboratory periods for 20 weeks.
(May not be combined with BOT 421/422 (or †BOT 490) for full course credit in any degree programme.)
Prerequisite: BOT 320/321 (or †BOT 311/371)

BOT 421 **Plant Cell Metabolism** 1L,½T,2½P
An advanced course on aspects of plant metabolism in relation to cell structure and function. Among areas to be emphasized are recent developments in photosynthesis, photorespiration and control mechanisms. Seminar and practical work in common with BOT 421. Practical consists of 3 hr. laboratory periods for 20 weeks.
(May not be combined with BOT 420/422 (or †BOT 475) for full course credit in any degree programme.)
Prerequisite: BOT 320/321 (or †BOT 311/371)

BOT 422 **Advanced Plant Physiology** 2L,½T
This course is a combination of lectures and tutorials given in BOT 420 and BOT 421. (May not be combined with BOT 420/421 for full course credit in any degree programme.)
Prerequisite: BOT 320/321 (or †BOT 311/371)

BOT 423 **Radioisotopes in Biology** 1L,3P
A lecture and laboratory course on the basic principles of tracermethodology and measurement of radioactivity, principles and conditions for the use of radioisotopes, application of tracermethodology to the problems of intermediary metabolism, and practical problems concerned with health hazards.

BOT 430 **Ecological Plant Geography and Palynology** 2L,3P
A lecture and laboratory course dealing with the origin and development of the vegetation of North America and with the techniques of pollen and macrofossil analysis of Quaternary deposits.
Prerequisite: None (BOT 300 (or †BOT 373) recommended.)
Co-requisite: None (GLG 425 recommended.)

BOT 431 **Ecology of Wetland and Aquatic Ecosystems** 1L,3P
A lecture and laboratory course dealing with the main wetland and aquatic ecosystems and the relation between the edaphic environment and plant growth and distribution.

BOT 432 **Applied Ecology** 1L,3P
A lecture and laboratory course dealing with the application of ecological principles to problems of land utilization and food production, and to problems of air, soil and water pollution. Aspects of conservation will be considered.

BOT 440 **Advanced Work in Cytology** Arranged
Research project, literature review and essay, and participation in seminars.
Prerequisite: None (BOT 240, 341, ZOO 226 (or †BOT 223/370) recommended.)

BOT 441 **Electron Microscopy** 1L,1T,3P
A lecture and practical course on the techniques and applications of the electron microscope in selected topics of ultrastructural cytology and virology.
Prerequisite: BOT 240 (or †BOT 223).

BOT 442 **Plant Breeding** Arranged
A lecture and laboratory course on the origin and evolution of cultivated plants, as controlled by man, and the application of genetics to modern methods of plant breeding. This course is given at Erindale College.
Prerequisite: None (BOT 341, ZOO 226 (or †BOT 370) recommended.)

BOT 450 **Plant Virology** 1L,3P
An advanced course with lectures on the structural, functional, genetic, and biological properties of plant viruses. The laboratory emphasizes methods used in determining the properties of viruses and other biological macromolecules.
Prerequisite: JBM 350

BOT 451 **Physiology of Fungi and Parasitism** 1L,1T,3P
A lecture and laboratory course on the growth, metabolism and parasitic activities of fungi and the physiology of the infected plant.
Prerequisite: None (BOT 301/320/351 (or †BOT 373/311/476) recommended.)

BOT 460 **Project in Biological Sciences** Arranged

CHEMISTRY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

CHM 100 **Contemporary Chemistry** 2L,1T
A course for those interested in learning something about modern chemistry and its relationship, dependency and impact on other fields of knowledge. Emphasis is placed on philosophical concepts of science and the role of chemistry in modern technological society.
(May not normally be combined with CHM 120 in any degree programme.)

CHM 120 **Basic Concepts of Modern Chemistry** 2L,1T,2P
Introduction to the concepts of thermodynamics leading to a discussion of chemical equilibrium. Atomic and molecular structure and modern theories of chemical bonding. Chemical reactivity in relation to molecular structure.
(May not normally be combined with CHM 100 in any degree programme.)
Prerequisite: XIII CHM, MAT A. (Students with XII CHM and XIII MAT A may enrol if they take an additional two-hour/week tutorial for the first term.)
Co-requisite: MAT 130/134/135/139/150.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

CHM 220 **Chemical Statics and Dynamics** 2L,1T
Elementary quantum mechanics with special emphasis on rotors and vibrators. Principles and applications of electronic, vibrational, rotational and magnetic resonance spectroscopy. The second and third laws of thermodynamics. Kinetic molecular theory and elementary statistical mechanics. Reaction kinetics and its application to the elucidation of reaction mechanisms.
Prerequisite: CHM 120, MAT 130/135/139/(140 & 150)
Co-requisite: None (MAT 230/234/235/239/250 recommended.)

CHM 235 **Structure and Synthesis in Chemistry** 2L,4P
A course emphasizing structure and bonding in inorganic and organic compounds and their study by spectroscopic and other physical methods. The last part of the course presents fundamental concepts of organic chemistry. The laboratory, coupled with an organized tutorial programme, introduces students to the theory and practice of basic laboratory techniques and to the synthesis and identification of organic and inorganic compounds.
Prerequisite: CHM 120

CHM 323S **Quantum Chemistry** 2L

A mathematical approach to quantum chemistry leading to a treatment of: electronic structure of atoms; molecular orbital and valence bond theory, rotational, vibrational and electronic spectroscopy.
Prerequisite: MAT (140 & 150)/235/239
Co-requisite: CHM 220

CHM 324F **Crystal Chemistry** 2L

Nature of crystals; the unit cell; symmetry. Diffraction and crystal structure analysis. Types of crystal structures, various applications of crystallography. Crystal defects. (May not be combined with †CHM 325F in any degree programme.)
Prerequisite: MAT 135/139/(140 & 150)

CHM 350Y **Instrumental Methods of Analysis** 4P

A laboratory course that will focus on some facets of measurements systems, with the emphasis on interpretation of observed facts, using sophisticated equipment to stimulate useful thinking in analytical problem solving.
Prerequisite: †CHM 317 (†CHM 314 desirable)
Co-requisite: CHM 220, 235

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

CHM 320 **Physical Chemistry** 2L,3½P

Approximately one-half of the course will be concerned with statistical thermodynamics, statistical mechanics and their applications to chemical problems. The remainder of the course will be concerned with the thermodynamics of non-ideal systems and with other topics in physical chemistry. The laboratory will consist of a selection of experiments in physical chemistry.
(May not be combined with †CHM 327 and 377/378/387 in any degree programme.)
Prerequisite: CHM 220, MAT 235/239/(240 & 250) (or †CHM 317, †MAT 210)

CHM 325F **Macromolecular Chemistry** 2L

An introduction to the organic and physical chemistry of large molecules. The structure and synthesis of important polymers involved in the industrial technology of synthetic fibers and plastics is described, along with an outline of the structure of biological macromolecules. Particular emphasis is given to the application of physicochemical methods.
Prerequisiste: CHM 220/235 (or †CHM 317/221)

CHM 330 **Inorganic Chemistry** 2L,4P

A series of 12 lectures on group theory and spectroscopy will be followed by a discussion on both non-transitional and transitional elements. Some coverage of specific aspects of individual elements or groups of elements will be included. The emphasis will be largely on descriptive chemistry, but also with correlations to be drawn between chemical properties and structure and/or bonding. Some stress will be laid on the means for determining physical properties and structure.
(May not be combined with †CHM 324 & 374 in any degree programme.)
Prerequisite: CHM 235 (or †CHM 221/314)

CHM 340 **Organic Chemistry** 2L,3½P

The stereochemistry of organic compounds and the relationship of this to physical and chemical properties. The reactivities of organic compounds and the factors affecting the equilibria and rates of reactions. The mechanisms of organic reactions and the reactive intermediates involved. The major classes of organic reactions: addition, substitution, radical reactions, molecular rearrangements, oxidation and reduction. The application of these reactions in the synthesis of organic compounds in both lectures and laboratory.

(May not be combined with †CHM 321, (371/372/381) in any degree programme.)

Prerequisite: CHM 235 (or †CHM 221)

CHM 347S **Organic Chemistry of Biologically Important Compounds** 2L

A survey of the chemistry of the main classes of naturally-occurring organic compounds. Discussion of structure, properties and synthesis of selected compounds in each group. Classes of compounds to be studied include: amino acids, peptides, proteins; carbohydrates; nucleosides, nucleotides, nucleic acids; lipids; terpenes; steroids; alkaloids; etc.

(May not be combined with †CHM 340S in any degree programme.)

Co-requisite: CHM 340

CHM 422F **Fundamentals of Quantum Mechanics** 2L

The course studies the general formalism of quantum mechanics and the use of various representations for quantum mechanical results, along with a discussion of "spin" and angular momenta.

Prerequisite: CHM 323S/(PHY 300, 321Y) (or †CHM 327)

CHM 423S **Approximation Methods in Quantum Chemistry** 2L

The course examines the theory and applications of the perturbation and variation methods, and in particular discusses Hartree-Fock approaches to atomic and molecular problems, and the problem of electron correlation.

Prerequisite: CHM 323S (or †CHM 327) (CHM 422F is desirable)/(PHY 300, 321Y and extra reading)

CHM 424F **Theory of Spectroscopy I** 2L

Theory of radiation, time dependent perturbation theory, transition probabilities, oscillator strength, stimulated emission; atomic spectra; UV, visible, IR and Raman spectroscopy with an emphasis on diatomic molecules.

Prerequisite: CHM 323S (or †CHM 327) (†CHM 326S desirable.)

CHM 425S **Theory of Spectroscopy II** 2L

Symmetry in spectroscopy; ESR, NMR, NQR; Optical activity.

Prerequisite: CHM 424F

COURSES OPEN TO FOURTH-YEAR STUDENTS

CHM 420 **Theory of Reactions Kinetics** 2L

A review of the status of the theories of chemical kinetics including a discussion of the following topics: classical collision theory, transition state theory, potential energy surface, tunnelling and kinetic isotope effects, intermolecular potentials, theories of unimolecular, bimolecular, termolecular, and more complex reactions.

(May not be combined with †CHM 427 in any degree programme.)

Prerequisite: CHM 320 (or †CHM 327)

CHM 429Y **Introduction to Research in Physical Chemistry** 5P

An experimental or theoretical research problem under the supervision of a member of the Physical Chemistry staff. Students are expected to spend approximately 130 hours throughout the year. Enrolment in this course may be restricted and must be approved by the Department. Applications for enrolment should be made to the Department in the spring prior to entry into 4th year.
(May not be combined with †CHM 477 in any degree programme.)
Prerequisite: CHM 320 (or †CHM 327)

CHM 430F **Theoretical Inorganic Chemistry I** 2L

Applications of modern physical methods to problems in inorganic chemistry. Examination of the mechanistic course of a number of reactions including substitution in octahedral and square planar complexes and redox reactions; electronic absorption and vibrational spectroscopy with application of these techniques to problems in stereochemistries of metal complexes and metal-ligand interactions; plus less detailed discussions of other physical tools available to the inorganic chemist.
(May not be combined with †CHM 424 in any degree programme.)
Prerequisite: CHM 330 (or †CHM 324/314)

CHM 431S **Theoretical Inorganic Chemistry II** 2L

Theory of transition metal compounds. (i) Crystal field theory. Slater's treatment of atoms, with applied ligand field for high and low spin systems. Spin orbit coupling. (ii) Molecular orbital treatment. Methods of evaluating integrals. (iii) Some comparisons of theory with experiment, and trends in the chemistry of transition elements.
(May not be combined with †CHM 424 in any degree programme.)
Prerequisite: CHM 430F

CHM 435 **Topics in Inorganic Chemistry** 2L

A series of topics on areas of current interest in inorganic chemistry. Topics will be selected so as to cover a wide range of interests, some examples of which are: catalysis; conformational analysis and optical activity, biological inorganic chemistry; reactivity of coordinated ligands; transition metal carbonyls; boranes; carboranes and complexes thereof; fluxional molecules.
(May not be combined with †CHM 425 in any degree programme.)
Prerequisite: CHM 330 (or †CHM 314/324)

CHM 438F **Advanced Inorganic Chemistry Laboratory** Arranged

A laboratory, open throughout the day for the second half of the first term, in which students are instructed in the use of modern instrumentation and techniques and are given the opportunity, as an introduction to work in a research laboratory, to plan and execute independent projects. Students are expected to spend approximately 130 hours during the period specified.
(May not be combined with †CHM 474/471/477 in any degree programme.)
Prerequisite: CHM 330/(or †CHM 324) (CHM 320, 340 strongly recommended.)

CHM 439Y **Introduction to Research in Inorganic Chemistry** 5P

An experimental or theoretical research problem under the supervision of a member of the Inorganic Chemistry staff. Students are expected to spend approximately 130 hours throughout the year. Enrolment in this course may be restricted and must be

approved by the Department. Applications for enrolment should be made to the Department in the spring prior to entry into 4th year.
(May not be combined with CHM 429Y (or †CHM 471/474/477) in any degree programme.)
Co-requisite: CHM 438F

CHM 440F **Synthetic Organic Chemistry** 2L
A selection of reactions of synthetic value is discussed with emphasis on application of the reactions to preparative organic chemistry. An attempt is made to systematize and rationalize the material presented.
(May not be combined with †CHM 422F in any degree programme.)
Prerequisite: CHM 340 (or †CHM 321 and 371/372/381)

CHM 441S **Structural Organic Chemistry** 2L
The determination of the structures of selected complex organic molecules will be discussed; examples will be chosen that illustrate the application of a variety of degradative, synthetic, and spectroscopic methods to structure determination.
(May not be combined with †CHM 423S in any degree programme.)
Prerequisite: CHM 340 (or †CHM 321 and 371/372/381)

CHM 444F **Kinetics and Mechanism in Organic Chemistry** 2L
Non-kinetic and kinetic methods to study reaction mechanism. A review of elementary rate processes and multistep chemical reactions. Correlation between structure and mechanism.
(May not be combined with †CHM 421F in any degree programme.)
Prerequisite: CHM 220, 340 (or †CHM 321 and 371/372/381)

CHM 445S **Molecular Orbital Theory in Organic Chemistry** 2L
Application of the Huckel molecular orbital HMO approach to simple organic π-systems. The use of elementary group theory to treat larger π-systems. Huckel's rule and aromatic character. Correlations of HMO results with experimental data. Basis of the Woodward-Hoffman selection rules.
(May not be combined with †CHM 420S in any degree programme.)
Prerequisite: CHM 220, 340 (or †CHM 321 and 371/372/381)

CHM 447S **Introduction to Biological Organic Chemistry** 2L
The chemistry, including stereochemistry and mechanisms, of enzymic and other processes of metabolism and reproduction in living systems.
(May not be combined with †CHM 419 in any degree programme.)
Prerequisite: CHM 347S (or †CHM 340S)

CHM 448F **Advanced Organic Chemistry Laboratory** Arranged
A laboratory, open throughout the day for the first six weeks of the term in which students are instructed in the use of modern instrumentation and techniques and are given the opportunity, as an introduction to work in a research laboratory, to plan and execute independent projects. Students are expected to spend approximately 130 hours during the period specified.
(May not be combined with CHM 438F (or †CHM 471/474/477) in any degree programme.)
Prerequisite: CHM 340 (or †CHM 321 and 371/372)

CHM 449Y **Introduction to Research in Organic Chemistry** 5P
An experimental or theoretical research problem under the supervision of a member of the Organic Chemistry staff. Students are expected to spend approximately 130 hours throughout the year. Enrolment in this course may be restricted and must be approved by the Department. Applications for enrolment should be made to the Department in the spring prior to entry into 4th year.
(May not be combined with CHM 429Y (or †CHM 471/474/477) in any degree programme.)
Prerequisite: CHM 448F

CHM 470 **Approved Graduate Course** 2L
Any chemistry course or two half-courses listed in the graduate calendar which is not also listed in the Arts and Science Calendar. Must be approved by the Department.
(May not be combined with CHM 471Y in any degree programme.)
Prerequisite: Departmental approval

CHM 471Y **Approved Graduate Half-Course** 2L
Any chemistry half-course listed in the graduate calendar which is not also listed in the Arts and Science Calendar. Must be approved by the Department.
(May not be combined with CHM 470 in any degree programme.)
Prerequisite: Departmental approval.

CHINESE

See "East Asian Studies"

CINEMA

See "Innis College"

CLASSICAL STUDIES

GREEK

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

GRK 100 **Introductory Greek with Selected Readings** 4T
This course is designed to introduce beginners to the ancient Greek language and to prepare them for the reading of Greek literature.

GRK 120S **The Wanderings of Odysseus** 3T
Homer: *Odyssey*, 6, 9, 11. Further study of language.
Prerequisite: XIII GRK/GRK 100
Co-requisite: Any other half or full course in the same subject.

GRK 121S **Socrates on the Comic Stage** 3T
Aristophanes: *Clouds.* Further study of language.
Prerequisite: XIII GRK/GRK 100.
Co-requisite: Any other half or full course in the same subject.

GRK 122F **Socrates on Trial** 3T
Plato; *Apology of Socrates.* Further study of language.
Prerequisite: XIII GRK/GRK 100
Co-requisite: Any other half or full course in the same subject.

GRK 123F **Athenian Society as Reflected in the Courts** 3T
Family, trade, welfare, and finance in fourth-century Athens, in the speeches of the major authors. Further study of language.
Prerequisite: XIII GRK/GRK 100
Co-requisite: Any other half or full course in the same subject.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

GRK 220 **Greek Tragedy** 3T
With reading of: Aeschylus, Prometheus Bound; Sophocles, Antigone; Euripides, Hippolytus or Medea.
Prerequisite: GRK 100/two of GRK 120S/121S/122F/123F

GRK 221 **Greek Prose Literature** 3T
(1) The Beginning of the Writing of History, with reading of selections from Herodotus, Book 1. (2) Eros and Philosophy, with reading of Plato, Symposium. Prose Composition (required of Specialists only.)
Prerequisite: GRK 100/two of GRK 120S/121S/122F/123F

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

GRK 320 **Greek Epic** 2L,1T
With reading of Homer *Iliad.*
Prerequisite: Any GRK 200-series course, preferably 220

GRK 321 **Introduction to Plato** 2L,1T
With reading of the *Republic.*
Prerequisite: Any GRK 200-series course, preferably 221

GRK 322 **Greek History to 479 B.C.** 2L,1T
With reading of Herodotus, 6, 7, 8.
Prerequisite: Any GRK 200-series course, preferably 221

COURSES OPEN TO FOURTH-YEAR STUDENTS

GRK 420 **Seminar in Greek Drama** 2L,1T
With reading from plays of Aeschylus, Sophocles, Euripides and Aristophanes, and Aristotle *Poetics.*
Prerequisite: GRK 220/320

GRK 421 **Seminar in Greek Philosophy** 2L,1T
With readings to include the Pre-Socratics and Aristotle *Categories* and *Nicomachean Ethics* (selections).
Prerequisite: GRK 221 or any 300-series course in Greek

GRK 422 **Seminar in Greek History from 479-404 B.C.** 2L,1T
With reading from Thucydides 1-5 (selections), 6, 7.
Prerequisite: GRK 221 or any 300-series course in GRK

GRK 423 **Seminar in Greek Lyric Poetry** 2L,1T
With reading of *Greek Lyric Poetry* (Campbell); selections from Pindar, Theocritus and Callimachus.
Prerequisite: Any GRK 200-series or 300-series course

GRK 430 F/S **Greek Prose Composition** 1T
Co-requisite: LAT 430F/S or LAT 431F/S

GREEK AND ROMAN HISTORY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

GRH 100 **Greek and Roman Civilization** 2L,1T
Its political, economic and cultural evolution, beginning in an age of independent city-states, reaching rich maturity in the Hellenistic age of Great Powers, and culminating in the multiracial and multicultural Roman empire. Its place in world history.

GRH 190 **Urban Environment in the Greek-speaking World** 3T
The development of political and social institutions centered on the city from 600 B.C. to A.D.200. The readings for the course, original sources in translation, are chosen to show the characteristics of Greek city life. Modern environmental studies are used to elucidate the ancient experience.
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 201 **Greek History to the Death of Alexander** 2L,1T
A study of political, economic and intellectual development in the youthful creative phase of Classical Civilization.

GRH 202 **History of Rome from its Foundation to 31 B.C.** 2L,1T
Political, economic and cultural development accompanying Rome's evolution from city-state to world empire.

GRH 203 **The Roman Empire** 2L,1T
Constitutional, economic, military and religious problems of a world state and a declining civilization.

Note: Ten of the seminar courses in the series GRH 210-416 will be offered in 1970-71. Students are requested to check with their College Registrar to ascertain which are available.

GRH 210 **Athenian Democracy** 2T
Prerequisite: None (GRH 100/201 (or †GRH 100/190) recommended)

GRH 211F **Alexander the Great** 2T
Prerequisite: None (GRH 100/201 (or †GRH 100/190) recommended)

GRH 212 **The Roman Revolution** 3T
A study of the transition from republic to principate, based upon original sources in translation.
Prerequisite: None (GRH 100/202 (or †GRH 190/200) recommended)

GRH 213S **Constantine the Great** 2T
Prerequisite: None (GRH 100/203 (or †GRH 190/202) recommended)

GRH 214 **Decline and Fall of the Roman Empire** 2T
(May not be combined with GRH 203 (or †GRH 202) in any degree programme.)
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 215 **Studies in Greek History of the Fifth Century** 2L,1T
Aspects of life in the golden age of Greece.
Prerequisite: None (GRH 100/201 (or †GRH 100/190) recommended)

GRH 310 **Archaic Greece** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 311 **Greek Political Thought** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 312 **Roman Republican Imperialism** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 313 **The Julio-Claudian Emperiors** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 314 **Religion in the Roman Empire** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 315 **The Jews in Greek and Roman History** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 316 **Education in Greco-Roman Antiquity** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 317 **The History of Greece and Rome as Analysed by Modern Critics** 2T
(e.g. Hegel, Marx, Toynbee, McNeill)
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 410 **Politics in the Roman Republic** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 411 **Roman Law** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 412 **Thueydides** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 413 **Polybius** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 414 **Ammianus Marcellinus** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 415 **Studies in the Social and Economic History of the Ancient World** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GRH 416 **Science and Technology in the Ancient World** 2T
Prerequisite: None (GRH 100 (or †GRH 190) recommended)

GREEK AND LATIN LITERATURE IN TRANSLATION

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

GLL 190 **Greek and Roman Religion and Mythology** 2L,1T
With selected readings in the ancient sources.

GLL 200 **Greek and Roman Drama** 2L,1T
With a study of selected plays of Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Plautus, Terence and Seneca.

GLL 201F **Lyric and Pastoral Poetry** 2L,1T
With readings of Lattimore, Greek Lyrics, and selections from the Greek and Latin poets.

GLL 202S **Satire and the Ancient Novel** 2L,1T
With readings of Horace, Juvenal, Petronius, Apuleius and Longus.

GLL 300 **Greek and Roman Philosophy** 2L,1T
With reading from the Pre-Socratics, Plato, Aristotle and post-Aristotelian and Roman philosophical writings. (1970-71).
Greek and Roman Epic and its Influence
With readings of Homer, Virgil, Ovid and Lucan (1971-72).

LATIN

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

LAT 100 **Introductory Latin** 4T
This course is designed to acquaint the student with the essentials of the Latin language and to introduce him to Roman literature.

LAT 120F **The Poetry of Catullus** 3T

Selections from the work of Catullus, including both his love poems and his satiric epigrams. This course will concentrate on the literary value of Catullus' work. It will also include study of the Latin language.

Prerequisite: XIII LAT/LAT 100/130

Co-requisite: Any other half or full course in the same subject

LAT 121S **The Poetry of Horace** 3T

Selections from the Odes of Horace. This course will concentrate on the literary value of Horace's lyric poetry. It will also include study of the Latin language.

Prerequisite: XIII LAT/LAT 100/130

Co-requisite: Any other half or full course in the same subject

LAT 122F **Livy and Roman Historical Writing** 3T

Livy, Book 1 will be read for the light it sheds both on the early history of Rome and on Livy's methods as an historian. The course will also include study of the Latin language.

Prerequisite: XIII LAT/LAT 100/130

Co-requisite: Any other half or full course in the same subject

LAT 123S **Cicero and Roman Oratory** 3T

Reading of Cicero *Pro Caelio.* This speech, which deals with a cause celebre in the circle of Catullus, will be studied for the light which it sheds on social life at the end of the Roman Republic and to illustrate Cicero's skill as an orator. The course will also include study of the Latin language.

Prerequisite: XIII LAT/LAT 100/130

Co-requisite: Any other half or full course in the same subject.

LAT 130 **Intermediate Latin** 3T

This course is designed for the student who has not taken Latin beyond Grade XII Cicero's *Pro Cluentio* (selections) and Ovid *Metamorphoses I* will be read and the course will also include study of the Latin language. Note: This course may not be taken by students with Grade XIII Latin or equivalent except by permission of the Department.

Prerequisite: XII LAT/LAT 100

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

LAT 220 **Comedy and Epic in the Roman Republic** 3T

A study of Roman comedy, based on the reading of a play of Plautus and a play of Terence, and of Republican hexameter poetry, based on reading from Lucretius and Catullus' short epic, *The Marriage of Peleus and Thetis.* Prose Composition (required of Specialists only).

Prerequisite: LAT 100/130 or two of LAT 120F/121S/122F/123S

LAT 221 **Cicero and His Times** 3T

A study of Cicero's political career, with readings from his letters and Sallust *Catiline.* Prose Composition if not taken in LAT 220 (required of Specialists only.)

Prerequisite: LAT 100/130 or two of LAT 120F/121S/122F/123S

LAT 222 **Christian and Mediaeval Latin** 3T
Selections of prose and poetry.
Prerequisite: LAT 100/130 or two of LAT 120F/121S/122F/123S

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

LAT 320 **Virgil** 2L,1T
A study of the poet's literary achievement, with reading of the *Aeneid* and selections from the *Eclogues* and *Georgics.*
Prerequisite: Any LAT 200-series course.

LAT 321 **Literature of the Augustan Age** 2L,1T
A study of poetry from the Augustan period, based on the reading of selections from Horace *Odes* and *Epistles,* Propertius, Tibullus and Ovid *Amores* (1970-71).
A study of poetry from the Augustan period, based on the reading of selections from Horace *Epistles,* Propertius, Tibullus and Ovid *Amores* (1971-72).
(May not be combined with LAT 320 in any degree programme.)
Prerequisite: Any LAT 200-series course

LAT 322 **Roman Satire** 2L,1T
A study of the development of Roman satirical writing, based on selections from Horace, Persius, Juvenal, Petronius, Seneca, Martial and Lucilius
Prerequisite: Any LAT 200-series course

COURSES OPEN TO FOURTH-YEAR STUDENTS

LAT 420 **Roman History 31 B.C.-A.D.68** 2L,1T
A study of the foundation of the Principate and of the achievements of the Julio-Claudian emperors, based on the reading of *Res Gestae* and Tacitus *Annals* 1-VI.
Prerequisite: Any LAT 300-series or approved 200-series course

LAT 421 **Post-Augustan Prose Literature** 2L,1T
With readings from the letters of Seneca and Pliny, Quintilian X, and Apuleius *Metamorphoses.*
Prerequisite: Any LAT 300-series or approved 200-series course.

LAT 422 **Roman Rhetoric** 2L,1T
A study of the theory and practice of oratory, based on readings from Cicero *De Oratore,* Seneca *Suasoriae* and *Controversiae,* Quintilian XII, and Tacitus *Dialogus.*
Prerequisite: Any LAT 300-series or approved 200-series course

LAT 423 **Roman Philosophy** 2L,1T
Based on readings from Cicero *De Finibus, De Fato,* and Lucretius *De Rerum Natura*
Prerequisite: Any LAT 300-series or approved 200-series course

LAT 424 **Roman Drama** 2L,1T
Based on a selection of plays from Plautus, Terence and Seneca.
Prerequisite: Any LAT 300-series or approved 200-series course

LAT 425 **Post-Augustan Poetry** 2L,1T
With readings from the work of Lucan, Valerius Flaccus and Statius
Prerequisite: Any LAT 300-series or approved 200-series course

LAT 430 **Latin Prose Composition** 1T
F/S *Prerequisite:* LAT 300-series or approved 200-series course
Co-requisite: LAT 431F/S or GRK 430F/S

LAT 431 **Comparative Philology of Greek and Latin** 1T
F/S *Prerequisite:* Courses in LAT and/GRK according to Specialist Programmes.
Co-requisite: LAT 430F/S or GRK 430F/S

COMMERCE

See "Political Economy"

COMPUTER SCIENCE

See "Mathematics"

CZECH AND SLOVAK

See "Slavic Languages and Literatures"

EAST ASIAN STUDIES

(See also Chinese, Indian and Japanese below)

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

EAS 102 **History of East Asian Civilization** 2L,1T
Selected topics to highlight the crucial developments and problems in the histories of China and Japan. Main emphasis is on gradual developments and changes. Provides a background for those who may subsequently wish to proceed further in the study of Chinese and Japanese civilizations.
(May not be combined with HIS 280 in any degree programme.)

EAS 116 **Introduction to Buddhism** 1L,1T
An historical and doctrinal introduction to Buddhism with its various schools.

EAS 124 **Chinese and Japanese Literature in Translation** 1L,1T
Literature as a reflection of the life and emotions of a culture and the individuals within it. The Chinese term is built around individual exploration (intensive or extensive as you wish), with discussion dealing with common concerns and problems arising therefrom. The Japanese term is built around an intensive discussion of a common core of brief selections which span Japan's literary history, both in time and in genre. Enrolment limit: 30

EAS 126 **Visual and Performing Arts of East Asia** 2L
An introductory survey of the archaeology, visual arts, music and theatre of the areas of Indian, Chinese and Japanese culture. The intention of the course is to stimulate interest in and further the study of these aspects of Far Eastern civilization.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

EAS 392 **The Historiography of East and South Asia** Arranged
A seminar on historiography in China, India and Japan in the ancient, medieval and modern periods and on modern historiography generally of East and South Asia. Open to students without language prerequisites and based on translated works.

CHINESE

COURSES OPEN TO FIRST-AND HIGHER-YEAR STUDENTS

EAS 100 **Introductory Modern Standard Chinese** 3T,2P
An introductory course in speaking, reading, and writing Chinese (Mandarin).

COURSES OPEN TO SECOND- AND HIGHER YEAR STUDENTS

EAS 200 **Intermediate Modern Standard Chinese** 3L,2P
A continuation of EAS 100. Further training in speaking, writing and reading the language.
Prerequisite: EAS 100

EAS 202 **Ancient and Mediaeval Chinese History** 2L,1T
A survey of the history of China up to circa 1550.

EAS 203 **Pre-Han Philosophy** 2L
Detailed study of translated chapters from early Confucian and Taoist texts, including *Hsŭn Tzu, Mencius,* and *Chuang Tzu.*

EAS 206 **Introductory Literary Chinese** 3L
An introductory reading course in Classical Chinese with emphasis on grammar.
Prerequisite: EAS 100

EAS 334 **Chinese Fiction** 2L
Traditional and modern Chinese fiction differ considerably in themes, structures and artistic devices. This course gives a chance to discover the aesthetics of the Chinese novel by historical and structural analysis, based on Chinese texts and/or English translations. Comparative aspect taken into account, wherever possible.
(May not be combined with †EAS 204 in any degree programme.)

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

EAS 332 **Advanced Modern Standard Chinese** 3L
Grammatical and semantic interpretation of Modern Chinese texts, combined with conversational Chinese.
(May not be combined with †EAS 320 in any degree programme.)
Prerequisite: EAS 200

EAS 333 **Chinese Buddhist Philosophy before the T'ang Dynasty** 2L
Detailed study of translations from Buddhist philosophical works composed or translated in China before 618 A.D.

EAS 335 **Intermediate Literary Chinese** 3L
A continuation of EAS 206. Syllabus flexible.
(May not be combined with †EAS 326 in any degree programme.)
Prerequisite: EAS 206 (or †EAS 200)

EAS 336 **Directed Reading in Modern Chinese** 2T
This course is designed for specialist students who wish to do intensive supervised reading in an area of special interest.
Prerequisite: EAS 200
Co-requisite: EAS 332

HIS 380 **The History of Modern China Since 1550** 2L,1T
(May not be combined with †EAS 323 in any degree programme.)

JMC 300 **Modern China in Revolution** 2T
An inter-disciplinary lecture course that traces the history, social context, and political theory of revolutionary trends in China from the Reform Movement of the 1890's to the Great Proletarian Cultural Revolution of the late 1960's.

COURSES OPEN TO FOURTH-YEAR STUDENTS

EAS 430 **The Chinese Novel** 3L
Representative selections from: *Shui Hu Chuan, San Kuo Chih Yen I; Hung Lu.*
(May not be combined with †EAS 420 in any degree programme.)
Prerequisite: EAS 332 (or †EAS 320)

EAS 431 **Modern Chinese Literature** 3L
Drama, essays, fiction and poetry of the 20th Century.
(May not be combined with †EAS 426 in any degree programme.)
Prerequisite: EAS 332 (or †EAS 320)
Co-requisite: EAS 332

EAS 432 **Readings in 19th Century Literary Chinese** 2L
(May not be combined with †EAS 440 in any degree programme.)
Prerequisite: EAS 335 (or †EAS 326)

EAS 433Y **Chinese Bibliography and Reference Works** 1L
(May not be combined with †EAS 448 in any degree programme.)
Prerequisite: EAS 332 (or †EAS 320)

JMC 400 **Nationalism and Social Change in Contemporary China** 2T
An inter-disciplinary seminar that examines various aspects of social change in China since 1900. The second term will deal exclusively with the period since 1949. Themes to be developed include nationalism, culturalism, modernization, urban and rural development, authoritarianism, and utopianism.

EAS 435 **Pre-Han Literature** 2L
(May not be combined with †EAS 438 in any degree programme.)
Prerequisite: EAS 335 (or †EAS 326)

EAS 436 **Advanced Reading in Modern Chinese** 2T
Intensive supervised reading in Modern Chinese. The specific field to be decided after consultation with the department.
Prerequisite: EAS 332 (or †EAS 320)

EAS 437 **T'ang Buddhism and Sung Neo-Confucianism** 2L
Reading and discussion of selected works in Chinese from T'ang Buddhist philosophy and Neo-Confucian philosophy of the Sung Dynasty.
Prerequisite: EAS 333 & 335 (or †EAS 326 & 327)

EAS 438 **Advanced Classical Chinese Syntax** 2T
Advanced Classical Chinese grammar and syntax.
(May not be combined with †EAS 436 in any degree programme.)
Prerequisite: EAS 206 (or †EAS 326)

EAS 439 **Introduction to Chinese Classical Historical Texts** 3T
Readings from the *Tso Chuan* and *Shih Chi.*
Prerequisite: EAS 206 (or †EAS 326)

EAS 440 **Classical Chinese Poetry** 3T
References: Representative selections from the poets of the Medieval Period: *Tsao Chih; Pao Chao; T'ao Yuan-ming; Li Po Chu-i; Su Tung Po.*
(May not be combined with †EAS 450 in any degree programme.)
Prerequisite: EAS 206 (or †EAS 326)

INDIAN

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

EAS 100 **Basic Sanskrit** 2L,4P
The object of this 'basic' course is the reading of Sanskrit texts, the language of the major sources for study of Indian civilization.

EAS 112 **Introduction to Indian History** 2L,1T
An introduction to the study of the development of Indian civilization. The course presents an outline from the origins of civilization in India down to the present day, tracing the continuity as well as the changes in Indian society and its cultural traditions.

EAS 215 **Modern Hindi** 1L,4P
An introduction to modern Hindi.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

EAS 210 **Intermediate Sanskrit** 3T
A continuation of EAS 110 using the same text books (Antoine, *Sanskrit Manual* and Warder, *Sanskrit Prose Reader*) and reading a varied selection of Sanskrit texts (from the Upamitibhavaprapañcā and the Chāndogya Upaniad, together with the Ubhāyābhisarikā).
Prerequisite: EAS 110

EAS 211 **Intermediate Sanskrit Literature** 3T
Additional Sanskrit literary readings for specialists taking EAS 210, particularly if their main interest is literature. The main selections are from an epic poem, the Saundarananda, and a lyric poem, the Meghasandeśa.
Prerequisite: EAS 110
Co-requisite: EAS 210

EAS 212 **Indian Political History** 1L,2T
An outline of the political history of India from the origins of civilization to the present day, with attention to the main historical problems, including the nature of the sources, chronology, systems of administration, methodology.

EAS 213 **Outline of Indian Philosophy** 3T
An historical outline of the rise of the main schools of Indian philosophy, focussing on their studies of the problem of knowledge.
Reference and course outline: Warder, *Outline of Indian Philosophy.*

EAS 214 **Indian Literature in Translation** 3T
An historical survey of Indian literature, with reading of recommended translations of characteristic dramas, fiction, poetry and criticism.

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

EAS 302 **Higher Sanskrit with Historical Texts** 3T
Kādambarī, selections from the *Purānas,* Kalhana.
(May not be combined with EAS 303/310 in any degree programme.)
Prerequisite: EAS 210

EAS 303 **Higher Sanskrit with Philosophical Texts** 3T
Kādambarī, Vaiśeşika Sūtra, Mūlamadhyamakakārikā XV and XXIV.
(May not be combined with EAS 302/310 in any degree programme.)
Prerequisite: EAS 210

EAS 310 **Higher Sanskrit with Literary Texts** 3T
Kādambarī, Amaruka, Bhagavadajjukīya
(May not be combined with EAS 302/303 in any degree programme.)
Prerequisite: EAS 210

EAS 311 **Higher Sanskrit Literature** 3T
Svapnavāsavadatta, Macdonell: *Vedic Reader, Nātyaśāstra* I and VI; the theory of the classical Indian drama according to original Sanskrit texts.
Prerequisite: †EAS 210 & 211
Co-requisite: EAS 310

EAS 312 **Indian History** 1L,2T
The History of the Hindu Hynasties from A.D. 700-1800.
Prerequisite: EAS 210/212

EAS 313 **Ancient Indian Philosophy** 3T
From the origins to *Nāgārjuna.*
Prerequisite: †EAS 213

EAS 314 **Indian Drama: Theory and Practice** 3T
A study of the theory of the Indian Drama from the *Nātyasāstra* and other old texts, accompanied by reading of selected plays in translation.

EAS 315 **Readings in Hindi** 1L,3P
Selections from Hindi texts.
Prerequisite: EAS 215

EAS 317 **Introductory Pali** 3T
Including early philosophical texts.

EAS 319 **Modern Hindi for Specialists** 1L,4P
Prerequisite: EAS 210

COURSES OPEN TO FOURTH-YEAR STUDENTS

EAS 402 **Advanced Sanskrit with Historical Texts** 3T
Arthaśāstra I. 2-4, II. 1-12, VI, XV; Harśacarita; selected inscriptions.
(May not be combined with EAS 403/410 in any degree programme.)
Prerequisite: EAS 302 (or †EAS 322)

EAS 403 **Advanced Sanskrit with Philosophical Texts** 3T
Arthaśāstra I. 2-4, II. 1-12, VI, XV; *Nyāya Sūtra; Nyāya Bindu.*
(May not be combined with EAS 402/410 in any degree programme.)
Prerequisite: EAS 303 (or †EAS 322)

EAS 410 **Advanced Sanskrit with Literary Texts** 3T
Arthaśāstra I. 2-4, II. 1-12, VI, XV; *Uttararāmacarita; Kirātārjunīya* I with Mallinātha's commentary.
(May not be combined with EAS 402/403 in any degree programme.)
Prerequisite: EAS 310 (or †EAS 322)

EAS 411 **Advanced Sanskrit Literature** 3T
The study of Indian poetics and criticism from original sources, including detailed study of Bhāmaha's Kāvyālaṅkāra. *Mrcchakatika Rgvedasāmhitā.*
Prerequisite: EAS 310 & 311 (or †EAS 322)
Co-requisite: EAS 410

EAS 412 **Indian History** 3T
Study of a special period.
Prerequisite: EAS 310/312 (or †EAS 322/337)

EAS 413 **Medieval Indian Philosophy** 3T
Since Nāgārjuna (especially logic and aesthetics – with reference to EAS 410).
Prerequisite: EAS 313 (or †EAS 329)

EAS 414 **Indian Poetics and Criticism** 3T
A study of Indian literary and critical theories from ancient and traditional sources, with special reference to Bhāmaha and Ānandavardhana, and reading of selected works of literature.
Prerequisite: EAS 314/311 (or †EAS 214)

EAS 417 **Pali Literature** 3T
A philosophical text: *Poṭṭapāda Suttanta:* lyric poetry: *Suttanipāta Cūlavagga:* epic poetry: *Bhūridatta Jātaka* with the later prose narrative 'commentary' on the latter.
Prerequisite: EAS 317 (or †EAS 328)

EAS 418 **Marathi Literature (for Students of Indian history)** 3T
Readings in Marathi *bakhar, abhariga* and *ovī* literary forms.
Prerequisite: EAS 302 & 312 (or †EAS 322 & 337)

EAS 419 **Readings in Hindi for Specialists** 3T,1P
Selections from Modern Hindi Texts (1850-1950) and readings in Avadhī and Braj
Prerequisite: EAS 319 (or †EAS 338)

JAPANESE

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

EAS 120 **Introductory Modern Japanese** 1L,3T,1P
An introductory course in speaking and writing Japanese. Elementary grammar. Hiragana and basic characters.

EAS 222 **Super History of Japan** 2T
Seminars on topics in the political, social, intellectual and religious history of Japan. The general aim is to understand both the construction and maintenance of a revolution-proof society on the edge of the old Asian world, and its fate in the modern international world.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

EAS 220 **Intermediate Modern Japanese** 2L,2P
The course aims to equip students with basic skills for reading modern Japanese prose through careful structure analysis, acquisition of basic working vocabulary and oral drill.
Prerequisite: EAS 120

EAS 224 **Japanese Poetry and Theatre in Translation** 1L,1T
Reading and discussion of the major works of Japanese poetry accessible in translation. Discussion of Japanese theatre through the media of films, slides, records and translated texts.
Poetry: Manyöshu, Kokinshü, Shinkokinshū, haiku of Basho, Buson, Issa and the free verse of modern poets.
Drama: Nō, Kyōgen, Bunraku and Kabuki.

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

EAS 320 **Advanced Modern Japanese** 3L
Reading and grammatical analysis of texts by modern authors.
Prerequisite: EAS 220

EAS 322 **Classical Japanese** 3T
Introduction to classical Japanese, followed by reading of various short works by classical authors.
Prerequisite: EAS 220

EAS 323 **Japanese Fiction in Translation** 1L,2T
A general survey course, offering a wide selection of reading and discussion topics from both classical and modern Japanese fiction. Students are offered a literary-historical and critical guideline in a lecture (one hour weekly) and required to read available translations in preparation for seminarial discussions, held once in two weeks (two hours). A seminar paper (critical review) required at the end of each term.

EAS 324 **Elementary Modern Written Japanese** 3L
An introductory course designed for specialists in Chinese and others who wish to acquire an exclusively reading knowledge of Japanese for research purposes.

HIS 381 **Modern Japanese History** 2L,1T
See description for HIS 381.

COURSES OPEN TO FOURTH-YEAR STUDENTS

EAS 420 **Classical Japanese Authors** 2T
Reading and discussion of selected works in classical Japanese literature. Selection of texts will be made as far as possible to accomodate the interests of participating students.
Prerequisite: EAS 322 (or †EAS 330)

EAS 421 **Seminar in Modern Japanese Literature** 1½T
A specialized survey course, tracing the development of modern Japanese literature; based on seminarial discussions (critical analysis) of major writers in the Meiji-Shōwa period. Bioliographical, literary-historical data provided, but besides available translated materials, students are required to read untranslated novel-excerpts and/or short

stories in Japanese. A seminar paper (critical review) required at the end of each term.
Prerequisite: EAS 320 (or †EAS 304-324)

EAS 422F **Tokugawa Intellectual History** 2L
Discussion of developments in intellectual history during the period 1600-1868. Neo-Confucianism, *kogaku* and *kokugaku.*

EAS 423S **Readings in Japanese Intellectual History** 2L
Study of texts relating to Japanese thought from early times to Meiji Restoration. Selection of material will be made as far as possible to accomodate the interests of participating students.
Prerequisite: EAS 320 (or †EAS 304-324)

EAS 424 **Introduction to Japanese Music** 2T
The many types of Japanese music, both traditional and modern, are considered historically and comparatively, and are illustrated from the lecturer's own extensive collection of recordings. Musical background and knowledge of Japanese desirable but not essential.
Prerequisite: Permission of the Instructor.

EAS 425 **Seminar on Japanese Prints** 2T
The seminar centres on first-hand study of the Japanese print collection in the Royal Ontario Museum. Topics discussed include the history of the Japanese print, literature on prints and methods of study and cataloguing. (Not given in 1970-71.)
Prerequisite: Permission of the Instructor.

EAS 426 **Directed Reading in Modern Japanese** Arranged
Reading of selected works in modern Japanese under the supervision of a staff member. The student chooses his own text with the supervisor's advice and approval. If there is shortage of supervising staff, students with common areas of interest may form a group to meet in tutorial sessions. Staff permission needed.
Prerequisite: EAS 320 (or †EAS 304-324) or by permission of the Instructor.

EAS 427 **Essentials of Traditional Japanese Civilization** 2T
An examination of Japanese civilization to the mid-nineteenth century as a stable society, from three successive points of view: (1) historiography (2) topics in political history (3) religious and intellectual history. Individual approaches of students are encouraged, especially in developing comparative studies and using concepts from other disciplines.
(May not be combined with †HIS 480 in any degree programme.)

ECONOMICS

See "Political Economy"

EDUCATION

See "Innis College"

EGYPTIAN

See "Near Eastern Studies"

ENGLISH

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

ENG 102 **English Literature: More to Milton** 3L

Poetry: Sidney, Spenser, Shakespeare, Donne, selected poems; Spenser, *The Faerie Queene,* selections. At least three of Jonson, Herrick, Herbert, Marvell, Vaughan, selected poems and Milton, selected minor poetry; Milton, *Paradise Lost,* selections. *Drama:* Three non-Shakespearean plays. Shakespeare, two plays.

Prose: Two or more of More, *Utopia,* Erasmus, *Praise of Folie,* Machiavelli, *The Prince,* Castiglione, *The Courtier* (trans Hoby), Montaigne, *Essayes* (trans. Florio). At least two of Bacon, Donne, Milton, Browne, selected prose.

Additional reading may be selected. Suggested text for prose and poetry: *The Norton Anthology of English Literature,* Volume I, to be supplemented as required.

(May not be combined with †ENG 204 in any degree programme.)

ENG 108 **Forms of Twentieth-Century Literature** 3L

Five of the following novels: Conrad, *Heart of Darkness;* Lawrence, *Sons and Lovers;* Woolf, *To the Lighthouse,* Hemingway, *Farewell to Arms;* Fitzgerald, *The Great Gatsby;* Waugh, *A Handful of Dust;* Faulkner, *Light In August:* a more recent novel to be selected. Five of the following plays: Shaw, *Major Barbara;* O'Casey, *Juno and Paycock;* O'Neill, *Long Day's Journey into Night;* Williams, *The Glass Menagerie,* Fry, *The Lady's Not For Burning;* Osborne, *Luther;* Pinter, *The Caretaker;* Albee, *Who's Afraid of Virginia Woolf?,* a play to be selected. Three of the following poets, Yeats, Frost, Eliot, Williams, Auden, Dylan Thomas, Stevens, a younger poet. Additional works may be selected.

(May not be combined with †ENG 100 in any degree programme.)

ENG 112 **Major British Writers** 3L

Selections from: Chaucer, Spenser, Shakespeare's non-dramatic poetry, Donne, Milton, Pope, Johnson, Wordsworth or Keats, Browning or Tennyson, Yeats, or T. S. Eliot.

Reference: The Norton Anthology of English Literature, one volume ed. (revised). (Alternative or additional texts may be assigned by the instructor). At least three plays, including one by Shakespeare; Swift, *Gulliver's Travels;* one novel, novella, or group of short stories by each of: Fielding, Dickens or George Eliot, and Joyce or James. Additional works may be selected.

(May not be combined with †ENG 105 in any degree programme.)

ENG 152 **Canadian Literature in English** 3L

Selections from *The Book of Canadian Prose* (ed. Smith); Moodie, *Roughing it in the Bush;* Leacock, *Sunshine Sketches;* MacLennan, *Each Man's Son;* Callaghan, *More Joy In Heaven.* Four to six additional novels. Selected poetry and short fiction. Recom-

mended reading: Canadian Anthology (ed. Klinck and Watters 2nd ed.); supplementary texts may be selected.
(May not be combined with †ENG 454 in any degree programme.)

ENG 165 **English Literature: Forms and Approaches** 3L
Emily Bronte, *Wuthering Heights;* Faulkner, *The Sound and the Fury;* Shakespeare, *Hamlet;* Congreve, *The Way of the World;* selections from the poetry of Marvell; selections from the poetry of Hopkins; More, *Utopia* or Browne, *Religio Medici* or Carlyle, *Sartor Resartus.* At least four more works chosen so as to extend the range of forms, to make possible additional approaches, and to illuminate by comparison the listed texts.
(May not be combined with †ENG 104 in any degree programme.)

ENG 200 **Old English Language and Literature** 3L
A study of the language, literature, and culture of the Old English period as represented principally in the surviving poetry. The first half of the course will focus on developing fluency in the reading of Old English, concentrating on the grammar, syntax, and style of various pieces of prose and poetry. The second half of the course will be given to the intensive study of further major texts in Old English literature.
Reference: J.C.Pope, *Seven Old English Poems.* Other texts to be selected.
(May not be combined with †ENG 103 in any degree programme.)

ENG 204 **Medieval Literature to 1500** 3L
A study of some of the major works of medieval literature. Boethius, *Consolation of Philosophy; Beowulf;* Dante, *Inferno; Sir Gawain and the Green Knight;* selections from Chaucer. At least five of the following: *Chanson de Roland;* Chrétien de Troyes; Marie de France; Gottfried von Strassburg; *Roman de la Rose; Njal's Saga; Pearl; Piers Plowman;* Malory; Everyman. Other texts to be selected. Chaucer and later English works will be read in the original.

ENG 212 **Shakespeare** 3L
A study of at least *ten* plays.
(May not be combined with †ENG 101 in any degree programme.)

ENG 218 **Major American Authors** 3L
An introductory study of a number of American authors – no fewer than four and no more than six – chosen from different periods and so as to suggest something of the range of American Literature. At least four of the authors should be drawn from the following list, Hawthorne, Melville, Whitman, Mark Twain, James, Stevens, Eliot, Faulkner.
(May not be combined with †ENG 102 in any degree programme.)

ENG 220 **Varieties of Prose Fiction** 3L
Reading lists to be provided through the College departments.
(May not be combined with †ENG 206 in any degree programme.)

ENG 230 **Varieties of Drama** 3L
Approximately twenty plays to be chosen from the different historical periods and genres. Reading lists to be provided through College departments.
(May not be combined with †ENG 205 in any degree programme.)

ENG 240 **English Poetry** 3L
A study of various forms, themes, styles and traditions.
(May not be combined with †ENG 202 in any degree programme.)

ENG 260 **Varieties of Biography** 3L
A study of various forms of biographical literature selected from different historical periods. The course may include biographies, autobiographies, letters, essays, journals and memoirs.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

ENG 300 **Advanced Studies in Beowulf and Other Old English Poetry** 3L
(May not be combined with †ENG 208 in any degree programme.)
Prerequisite: ENG 200 (or †ENG 103).

ENG 302 **English Poetry and Prose, 1500-1600** 3L
(May not be combined with †ENG 211 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 304 **English Poetry and Prose, 1600-1660** 3L
(May not be combined with †ENG 321 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 306 **English Poetry, Prose, and Drama, 1660-1800** 3L
(May not be combined with †ENG 320 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 308 **Romantic Poetry and Prose** 3L
(May not be combined with †ENG 435 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 312 **Chaucer** 3L
(May not be combined with †ENG 210 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 315 **Milton, Pope, Wordsworth, and Yeats** 3L
(May not be combined with †ENG 207 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 322 **Fiction before 1832** 3L
(May not be combined with †ENG 212 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 324 **Fiction 1832-1900** 3L
(May not be combined with †ENG 212 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 328 **Modern Novel** 3L
(May not be combined with †ENG 440 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 332 **English Drama to 1642** 3L
(May not be combined with †ENG 335 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 334F **Restoration and Eighteenth-Century Drama** 3L
Prerequisite: At least ONE previous course in English.

ENG 338 **Modern Drama** 3L
(May not be combined with †ENG 439 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 341 **The Longer English Poem** 3L
(May not be combined with †ENG 203 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 346 **Victorian Poetry** 3L
(May not be combined with †ENG 436 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 348 **Modern Poetry** 3L
(May not be combined with †ENG 438 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 350 **American Literature, 1607-1865** 3L
Prerequisite: At least ONE previous course in English.

ENG 352 **American Literature, 1865 –** 3L
Prerequisite: At least ONE previous course in English.

ENG 354 **Canadian Poetry** 3L
(May not be combined with †ENG 454 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 356 **Canadian Fiction** 3L
(May not be combined with †ENG 454 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 368 **Victorian Prose** 3L
(May not be combined with †ENG 455 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 369 **Seminar in Writing** 3L
Restricted to students who, in the opinion of the Department of English, show special aptitude for writing.
(May not be combined with †ENG 465 in any degree programme.)
Prerequisite: At least ONE previous course in English.

ENG 370 **Special Studies** 3L
Prerequisite: At least ONE previous course in English.

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

ENG 404 **Middle English Language and Literature** 3L
(May not be combined with †ENG 420 in any degree programme.)
Prerequisite: Normally at least THREE previous courses in English, with B-standing or better in each of at least THREE.

ENG 413 **Four Major Renaissance Authors** 3L
Prerequisite: Normally at least THREE previous courses in English, with B-standing or or better in each of at least THREE.

ENG 415 **Four Major Restoration and Eighteenth-Century Authors: Dryden, Pope, Swift, Johnson** 3L
Prerequisite: Normally at least THREE previous courses in English, with B-standing or better in each of at least THREE.

ENG 417 **Four Major Nineteenth-Century Authors** 3L
Prerequisite: Normally at least THREE previous courses in English, with B-standing or better in each of at least THREE.

ENG 419 **Four Major Twentieth-Century Authors** 3L
Prerequisite: Normally at least THREE previous courses in English, with B-standing or better in each of at least THREE.

ENG 465 **Theories of Literature** 3L
(May not be combined with †ENG 460 in any degree programme.)
Prerequisite: Normally at least THREE previous courses in English, with B-standing or better in each of at least THREE.

ENG 468 **History of the English Language** 3L
Prerequisite: Normally at least THREE previous courses in English, with B-standing or better in each of at least THREE.

COURSES OPEN TO FOURTH-YEAR STUDENTS ONLY

ENG 469 **Senior Essay** 3L
(May not be combined with †ENG 475 in any degree programme.)
Prerequisite: Open to fourth-year students only, who have at least THREE previous courses in English, with B-standing or better in each of at least THREE.

COURSES NORMALLY OPEN TO FOURTH-YEAR STUDENTS ONLY

ENG 470 **Special Seminars** 3L
Prerequisite: Normally open to fourth-year students only, who have at least THREE previous courses in English, with B-standing or better in each of at least THREE.

ETHICS

See "Philosophy"

FACULTY INTERDISCIPLINARY COURSES

See "Interdisciplinary Courses sponsored by the Faculty"

FINE ART

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

FAR 100 **Materials and Methods of Art History** 2L
A discussion of the theories and practice of art history, including not only theoretical approaches to art history as an academic discipline, but also the main bibliographical and photographic resources that specialists in the subject will be expected to use. *Co-requisite:* FAR 101/102

FAR 101 **Ancient Art** 2L,1T
A survey of the art of Greece and Rome. Emphasis is placed upon the importance of architecture and the arts as characteristic expressions of their age; this concept is illustrated by detailed study of the outstanding monuments.

FAR 102 **Medieval Art** 2L,1T
A selective survey of the art of the Christian world between 300 and 1400 A.D.

FAR 110 **Introduction to the Visual Arts** 6P
The language of vision is explained and explored. Discussions of various principles and concepts of form and space are accompanied by a series of pertinent practical exercises designed to acquaint the student with the basic media through experience in the use of a wide variety of materials. Students will be required to show evidence of ability in studio work before admission to the course.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

FAR 200 **European Art from 1400 to 1750** 3L
A selective survey of the concepts and problems involved in the transition from Late Medieval to Renaissance in Italy and Northern Europe, and of subsequent artistic and cultural developments with special emphasis on the seventeenth century.

FAR 201 **European Art from 1750 to the Present** 3L
A survey of modern art from the beginnings of Neo-Classicism to World War II, in architecture, sculpture and painting.

FAR 202 **The Bronze Age in the Aegean and Near East** 2L
The development of the Bronze Age civilizations of Egypt, Mesopotamia, Crete, and Mycenaean Greece. The material remains revealed by archaeological investigations are

discussed as documents of general cultural and historical significance as well as works of art.

FAR 220 **Later Greek and Roman Architecture** 2L
A detailed study of the transformation of the classical Greek architectural tradition into the Hellenistic style of the Aegean and Western Anatolia, and of the fusion of Hellenistic with Italic elements in Late Republican and Imperial Roman work. Special emphasis is given to the originality of Hellenistic and Roman architects.
Prerequisite: FAR 101 (or †FAR 100)

FAR 230 **Visual Arts II** 6P
The fundamental of drawing and design studied in FAR 110 will be continued, stressing development of the student; response to visual form and colour in its natural environment, including life drawing.
Prerequisite: FAR 110

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

FAR 300 **Gothic Art 1145-1270** 2L
An intensive study of selected related monuments of architecture, sculpture and the minor arts of the Early and High Gothic periods.

FAR 301 **High Renaissance Painting 1480-1520** 2L
The classical phase in painting in Florence and Rome, with special reference to the works of Leonardo da Vinci, Raphael and Michelangelo.

FAR 320 **Hellenistic and Roman Sculpture** 2L
The principal works of sculpture from the time of Alexander the Great to the end of the fourth century A.D. will be discussed. Selected pieces in the R.O.M. will be studied.
Prerequisite: FAR 101 (or †FAR 100)

FAR 321 **Early Medieval Art** 2L
The study of a limited number of important and characteristic works of art from the Early Christian, Byzantine and pre-Gothic periods.
Prerequisite: FAR 102 (or †FAR 100) or consent of the instructor

FAR 323 **The Renaissance in Northern Europe** 2L
Consideration of illumination and panel painting in connexion with methods and problems in drawing, graphics and the early printed book. Lectures and comprehension will be supplemented in direct ratio to a knowledge of French and German.
Prerequisite: FAR 102 (or †FAR 100) and FAR 200

FAR 324 **Italian Renaissance Architecture** 2L
A study of architecture between 1400 and 1570 and the architectural theories of the time.
Prerequisite: FAR 200

FAR 325 **The Baroque Period in Rome** 2L
The problem of Baroque and Classicism: France and Rome in the Seventeenth Century. A reading knowledge of French and Italian is expected.
Prerequisite: FAR 200

FAR 330 **Intermediate Painting** 6P
Projects are based on selected historical techniques of painting.
Prerequisite: FAR 230

FAR 331 **Introduction to Sculpture** 1L,4P
Elementary concepts and techniques of sculpture.
Prerequisite: FAR 230

FAR 332 **Introduction to Printmaking** 1L,6P
Introduction to the principles and practice of printmaking. Examination and discussion of major traditional techniques with studio projects chiefly in relief (i.e., woodcut) and intaglio (i.e., etching and engraving) methods.
Prerequisite: FAR 230

FAR 333 **Stage Design** 1L,3P
The history of theatrical design and study of its basic techniques; practical projects in the designing of settings and costumes.
Prerequisite: FAR 230 or consent of the instructor

COURSES OPEN TO FOURTH-YEAR STUDENTS

FAR 400 **Wright and Le Corbusier** 2L
A study in depth of the works of Frank Lloyd Wright and Le Corbusier with emphasis on their roles in the formation of twentieth century architecture. Special reading assignments are given for those who have had no prior courses in architectural history.

FAR 401S **Dada and Its Aftermath in the Plastic Arts** 2L
Seminar examination of the sources and innovating uses of pictorial imagery by artists of Dada, Surrealism, and the so-called Pop movements in Europe and the U.S.A. A fluent reading knowledge of French and one other appropriate European language is expected.

FAR 420 **American and Canadian Painting** 2L
A history of North American painting from ca. 1800 with special emphasis on the relationship to European traditions. The growth of distinctively national styles and criticism of this concept are to be examined.
Prerequisite: FAR 201 (or †FAR 300/320)

FAR 421F **Symbolism in European Art, ca. 1884-1905** 2L
A seminar investigation of interrelations between iconography and style in the artistic circle of Gauguin. A reading knowledge of French and one other appropriate European language is expected.
Prerequisite: FAR 201 (or †FAR 300/†320)

FAR 422 **Decorative Arts of France, England and Canada** 2L
A survey of furniture, textile, ceramic and silver design in Europe and North America between the Renaissance and 1850. The collections of the Royal Ontario Museum are used.
Prerequisite: FAR 200

FAR 430 **Advanced Painting** 6P
Individual projects in painting, and forms involving three- as well as two-dimensional design.
Prerequisite: FAR 230, and one of FAR 330/331/332 (or †FAR 370/†371)

FAR 431 **Advanced Sculpture** 6P
Prerequisite: FAR 331 (or †FAR 370)

FAR 432 **Printmaking Studio** 6P
Continued study of the various aspects of traditional and contemporary printmaking with individual projects in major techniques, including lithography.
Prerequisite: FAR 332

FRENCH

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

Note: The prerequisite for all of these courses (except FRE 100) is Grade XIII FRE.

FRE 100 **French Tragic Literature** 1L,1T
A study of the tragic mode in selected novels and plays. Texts studied in the original French. Students may choose lectures and tutorials conducted either in French or in English.
N.B. This course may not be counted towards a specialist programme in French Language and Literature, nor in Languages and Literatures, nor in Modern Languages and Literatures.
Prerequisite: A reading knowledge of French as determined by a test.

FRE 120 **Introduction to University French Studies** 1L,2T,2P
Language practice, including phonetics, grammar, composition, language laboratory work, with readings and discussions.
Prerequisite: XIII FRE

FRE 140 **Studies in Modern French Literature** 1L,1T
The study of specific texts in 19th and 20th century poetry, novel and drama. A practical introduction to techniques of literary criticism and analysis.
Prerequisite: XIII FRE
Co-requisite: FRE 120

FRE 142 **Man and Society In Fiction** 1L,1T
Studies in the contemporary French and French-Canadian novel, providing an introduction to critical studies in fiction.
Prerequisite: XIII FRE
Co-requisite: FRE 120

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

Note: The prerequisite for all of these courses (except FRE 200 & 300) is FRE 120

FRE 200 **French Comic Literature** 1L,1T
A study of the comic mode in selected novels and plays. Texts studied in the original

French. Students may choose lectures and tutorials conducted in either French or in English.
N.B. This course may not be counted towards a specialist programme in French Language and Literature, nor in Languages and Literatures, nor in Modern Languages and Literatures.
Prerequisite: FRE 100/120

FRE 271 **Language Practice** 3T,1P
A continuation of FRE 120, including grammar, composition, oral, vocabulary, pattern drills, language laboratory work, and practical phonetics.
Prerequisite: FRE 120

FRE 290 **Independent Study** Arranged
Individual study with a member of staff on a topic of common interest, including readings, discussions, papers. Students may if they wish arrange to study two topics, each of which will be considered as constituting one half of the course.
Prerequisite: FRE 120

FRE 300 **Realism and Idealism in French Literature** 1L,1T
A study of realistic and idealistic tendencies in selected examples of French fiction, theatre and poetry. Texts studied in the original French. Students may choose lectures and tutorials conducted either in French or in English.
N.B. This course may not be counted towards a specialist programme in French Language and Literature, nor in Languages and Literatures, nor in Modern Languages and Literatures.
Prerequisite: FRE 100/200/120

FRE 320 **The Classical Current** 1L,1T
Specific texts studied, with emphasis on the main period associated with the current.
Prerequisite: FRE 120

FRE 322 **The Philosophical Current** 1L,1T
Specific texts studied, with emphasis on the main period associated with the current. Not open to students who have taken the former FRE 320.
Prerequisite: FRE 120

FRE 324 **The Romantic Current** 1L,1T
Specific texts studied, with emphasis on the main period associated with the current.
Prerequisite: FRE 120

FRE 326 **The Realistic Current** 1L,1T
Specific texts studied, with emphasis on the main period associated with the current.
Prerequisite: FRE 120

FRE 328 **Symbolism and Surrealism** 1L,1T
Specific texts studied, with emphasis on the main period of the movement.
Prerequisite: FRE 120

FRE 330 **The Literature of French Canada** 1L,1T
Specific texts studied.
Prerequisite: FRE 120

FRE 342 **Studies in French Poetry** 1L,1T
Introduction to French poetry. Specific texts studied.
Prerequisite: FRE 120

FRE 352 **Drama from 1600-1800** 1L,1T
The study of specific texts.
Prerequisite: FRE 120

FRE 354 **Drama from 1800-1950** 1L,1T
The study of specific texts.
Prerequisite: FRE 120

FRE 362 **Prose Fiction from 1600-1800** 1L,1T
The study of specific texts.
Prerequisite: FRE 120

FRE 364 **Prose Fiction from 1800-1900** 1L,1T
The study of specific texts.
Prerequisite: FRE 120

FRE 366 **Prose Fiction from 1900-1950** 1L,1T
The study of specific texts.
Prerequisite: FRE 120

FRE 372 **The Structure of Modern French** 1L,1T
An introduction to French linguistics: the study of the phonological, morphological and syntactical systems of contemporary French.
(Not open to students who have taken †FRE 275/355)
Prerequisite: FRE 120

FRE 373 **General History of the French Language** 1L,1T
Prerequisite: FRE 120

FRE 374 **Introduction to the Stylistics of French** 1L,1T
The study of stylistic aspects of contemporary spoken and written French.
(Not open to students who have taken †FRE 452)
Prerequisite: FRE 120

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

Note: Unless otherwise specified, the prerequisite for these courses in 1970-71 is any FRE course numbered from 220 upwards.

FRE 316 **Mediaeval French Language and Literature** 1L,1T
The study of mediaeval literary works in the original.
(Not open to students who have taken †FRE 330.)

FRE 318 **French Literature of the Sixteenth Century** 1L,1T
The study of specific texts.
(Not open to students who have taken †FRE 325.)

FRE 368 **Contemporary French Literature** 1L,1T
The study of the novel and theatre since circa 1950 with special reference to *le nouveau roman* and *l'anti-théâtre*

FRE 371 **Language Practice** 3T,1P
A continuation of FRE 271, this course is designed to advance the student's competence in written and spoken French.
(Not open to students who have taken †FRE 340)
Prerequisite: FRE 271

FRE 390 **Independent Study** Arranged
Individual study with a member of staff on a topic of common interest, including readings, discussions, papers. Students may if they wish arrange to study two topics, each of which will be considered as constituting one half of the course.

FRE 425 to 469 **Inter-College Options** 2T
FRE 425 to 469 are a group of specialized seminars in literary and linguistic studies. Descriptions of seminars to be offered will be made available before pre-registration. Courses will be offered only if there is a minimum enrolment of six students at pre-registration, unless otherwise decided by the Combined Departments. Open to students of all colleges, these courses will normally be limited to a maximum enrolment of twelve students. Priority will be given to Fourth-Year students.

FRE 474 **Advanced Stylistics** 1L,1T
The stylistic analysis of French literary expression.
Prerequisite: 1970-71: †FRE 274 or Grade A standing in †FRE 301 stylistics; subsequent years: FRE 374

FRE 476 **French Semantics** 1L,1T
A study of the notion of meaning and in particular of French words and their meaning. Not open to students who have taken †FRE 350.
Prerequisite: 1970-71: FRE 271 and †LIN 100; or †FRE 273/275/301/340
Subsequent years: FRE 271 and JAL 100; or FRE 372/373

FRE 485 **French Cinema** 3T
A study of the French film as a distinct genre, including its relation to literature, drama and aesthetics; structural analysis and film history.
(Not open to students who have taken †FRE 390)

COURSES OPEN TO FOURTH-YEAR STUDENTS

NOTE: Fourth-year students are reminded that many courses listed in the two preceding categories may be taken, *providing course content does not duplicate previous or concurrent work.*

FRE 420 **The French Novel from 1800-1950** 1L,1T
The study of specific texts. To be offered in 1970-71 only, and open only to Fourth-year students.
Prerequisite: †FRE 301/320

FRE 422 **French Poetry from 1800-1950** 1L,1T
The study of specific texts. To be offered in 1970-71 only, and open only to Fourth-year students.
Prerequisite: †FRE 301/320

FRE 471 **Advanced Written and Oral Expression** 2T
The writing of French prose; oral debate.
Prerequisite: 1970-71; †FRE 301/340; subsequent years: FRE 371

FRE 475 **Comparative Stylistics** 1L,1T
A comparative study of expression in written English and French; practice in translation.
Prerequisite: 1970-71: †FRE 301/340; subsequent years: FRE 371

FRE 490 **Independent Study in the Fourth Year** Arranged
Individual study with a member of staff on a topic of common interest, including readings, discussions, papers. Students may if they wish arrange to study two topics, each of which will be considered as constituting one half of the course.
Prerequisite: †FRE 301/320/340

GEOGRAPHY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

GGR 100 **Introductory Physical Geography** 2L,1T
Term I: Geomorphology: Principles of landscape, sculpture, modern versus classical geomorphology, morphoclimatic controls, weathering, soil formation, the hydrologic cycle, rivers and drainage basins, floods, erosion, pollution; man's role in changing the landscape.

Term II: Climatology: Time and space scales of fluctuations in atmospheric variables; fluxes and balances of radiation, heat, moisture; relationship to other geographically differentiated phenomena.

GGR 101 **Environment and Man** 2L,½T
Man and his societies in relation to the geographical environment. His changing perception of that environment, and his systems of responses to it, primarily now and in the future. The climate-soil-biotic complex and its stability in the presence of economic exploitation. Prediction, control and management of environmental factors. Environmental decay and restoration.

GGR 220 **Regional Economic Analysis** 2L,1T
An introduction to location, structure and interaction. The course focuses on: the use of location theory in explaining industrial and agricultural patterns; transport networks and flow systems; regional economic development. Examples are drawn from various parts of the world.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

GGR 200F **Pleistocene Geomorphology** 3L

Glaciology (nature of glacial ice, glacial budgets, relatons to climatic variations). Glacial erosion (erosional measurement, erosional forms, alpine glaciation). Glacial deposition (processes and forms, continental glaciation). Regional examples in southern Canada and the Arctic (periglacial conditions). Field and laboratory methods, including field trips.

GGR 201S **Pleistocene Geography** 3L

Causes of glaciation as suggested by theories of climatic change. Chronology and dating, (dendrochronology, pollen dating, laminated sediments, geochemical dating, etc.). Chronology of the Pleistocene and regional interpretations. The Pleistocene and early man. Pleistocene and modern man (pre-European Eskimo, Man in Siberia, contemporary adjustments and technology for glacial climates).

Prerequisite: GGR 200F

GGR 203S **World Climate** 2L

A review of the earth's principal climatic zones in relation to the atmospheric circulation: wind systems, meridional exchange systems, scales of motion. Specific attention will be given to problems (i) of the humid tropical climates, (ii) of North American climates and (iii) of atmospheric hazards.

Prerequisite: GGR 100 (or †GGR 202S)

GGR 205F **Pedology** 2L,1T

Soils in relation to the landscape; important physical and chemical properties of soils; weathering and soil formation; soil mineralogy; soil classification; an outline of the soils of Canada. Three one-day field trips on Saturdays.

Prerequisite: GGR 100

GGR 207F **Airphoto Interpretation** 1L,2P

An introduction to the application of airphotos as a tool in the study of the rural landscape, including: production and characteristics of airphotos, the technique of stereoscopic photo interpretation, and the principles of the airphoto analysis of landforms, drainage patterns, vegetation and rural land use.

(May not be combined with †GGR 304S in any degree programme.)

Prerequisite: GGR 100

GGR 208S **Photogrammetry** 1L,2P

An introduction to two aspects of aerial photogrammetry, viz: the determination of height differences and contour lines in airphotos and the radial triangulation and rectification of near-verticals.

(May not be combined with †GGR 304S in any degree programme.)

Prerequisite: GGR 207F

GGR 224 **Introduction to Urban Geography** 2L,½T

An introduction to the study of the city under these headings: origins of cities; description and measurement of the city; spatial structure of urban activities; intra-urban circulation; urban systems; urban growth; urban form and development in Europe and North America; the city as environment; contemporary approaches to urban problems.

GGR 240 **Canada – A Geographical Interpretation** 2L,½T
An examination of the development of economic regions in Canada. Emphasis will be put on questions of resource endowment, human migration and spatial interaction. Problems of present regional disparities will be discussed.

GGR 242 **The Geography of Latin America** 2L,½T
This course provides a survey of the settlement geography of Latin America, a discussion of the origin and distribution of the various types of land use in Latin America and a discussion, from the point of view of geography, of some of the major problems of present-day Latin America.

GGR 245 **Africa** 2L

GGR 248 **Historical Geography of Canada** 1L,1T
A lecture and seminar course on the geography of Canada before confederation emphasizing the emergence of the regional pattern and the relationship between society and human landscape in early Canada. Much of the fall term is devoted to early Quebec, and approximately half of the spring term to early Ontario.

GGR 270 **Introductory Analytical Methods** 3L
An introduction to elementary statistics and quantitative methods, sampling and survey techniques in geography. Topics include: modes of spatial analysis, data and measurement; descriptive, spatial and inferential statistics; theoretical probabilities; sampling and testing procedures; regression, correlation, analysis of variance; computer programming; research design.
Prerequisite and/or Co-requisite: Two other courses in Geography

GGR 280F **Principles of Cartography** 3L
A general introduction to cartography, with the emphasis on problems of map design. Lecturers and practical work.

GGR 281S **Workshop in Cartography** 1L,2P
Prerequisite: GGR 280F (or consent of instructor)

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

GGR 301 **Quantitative Geomorphology** 2L
Contents: Modern developments in geomorphology; geochemistry of weathering; mass-wasting processes, application of soil mechanics to geomorphic analysis; periglacial processes; fluvial geomorphology and river mechanics, including principles of sediment transport mechanics.
Reading: Comprehensive reading list covering current topics in geomorphology.
Prerequisite: GGR 270 (or †GGR 270 & 300F)
Co-requisite: GGR 390F

GGR 302F **Statistical Climatology** 2L
Prerequisite: GGR 100 & GGR 270
Co-requisite: GGR 370F is strongly recommended as a prerequisite or co-requisite

GGR 303S **Workshop in Statistical Climatology** 2L
Prerequisite: GGR 302F

GGR 305S **Plant Geography** 2L
Prerequisite: Two courses in Physical Geography.

GGR 320 **Philosophy of Geography** 2L
This course consists of a series of lectures in the first half on the history of geographical thought from the time of the Greeks to the end of the 19th century, and of a series of seminars in the second half on 20th century personalities and positions respecting the nature of geography.
Prerequisite: 3 courses in Geography

GGR 322F **Population Geography** 1L,½T
This course consists of one lecture per week on such topics as the historical development of world population, theories of population both historical and current, and major issues affecting the current world population situation, and a series of 2-hour seminars every second week on current population issues.

GGR 325S **Spatial and Locational Theory** 2L
This course is a general survey of contemporary spatial and locational theory. Such topics as spatial statistics, regional science theory, diffusion theory, and economic location theory will be examined, and their relation to modern geographic enquiry discussed. A term paper will be required in this course.
Prerequisite: GGR 270

GGR 326F **Industrial Location Theory and Analysis** 2L
Prerequisite: GGR 220 & GGR 270 (or consent of instructor)

GGR 328S **Transportation Systems** 2L
A survey of some geographical aspects of transportation. Topics include: models of spatial interaction, optimal flow and network generation; descriptors of network structure; travel behaviour, socio-economic impacts of transportation; transportation planning and plan evaluation strategies.
Prerequisite: GGR 370F is recommended

GGR 331F **Agricultural Origins and the Evolution of Agricultural Systems** 3L

GGR 334S **Water Resources** 3L
Prerequisite: GGR 100 or consent of instructor

GGR 336F **Issues In The Urban Geography of North America: Historical Approaches** 2L
Prerequisite: GGR 224 or consent of instructor

GGR 337S **Issues In The Urban Geography of North America: Contemporary Approaches** 2L
Prerequisite: GGR 224 & GGR 270 or consent of instructor

GGR 338F **Cities In Developing Countries** 2L
Prerequisite: GGR 224 or consent of instructor

GGR 339S **Seminar On The French Geographical Literature** (Not offered 1970-71)

GGR 340 **Europe** (Not offered 1970-71)

GGR 342F **Seminar On The Historical Geography of Latin America** (Not offered 1970-71)

GGR 343 **China** 3L
Prerequisite: 2 courses in Geography or consent of instructor

GGR 344 **The U.S.S.R.** 3L
Lectures are emphasized in the first term and seminars in the second term. Stress is placed on comparisons with North America. Topics include: the historical setting, the quality of the Soviet environment, the rural economy, the urbanization process, population migration and problems of regional development, industrial location and resource analysis.
Prerequisite: 2 courses in Geography or consent of instructor

GGR 350S **Research Seminar on Selected Problems in the Geography of Canada** 2L
The seminar will be concerned with the analysis of selected spatial processes such as the concentration and dispersal of manufacturing, spatial changes in the rural economy, and population migration. Emphasis will be placed on problems of measurement and the use of census and other primary source materials. Enrolment will be limited to not more than 15 students.
Prerequisite: GGR 270 and GGR 220 or 240

GGR 370F **Linear Models in Geography** 2L
An introductory survey of linear algebraic and matrix modeling approaches to geographic research. Topics include: Markov chains, interregional input-output models, graph theory and linear programming.
Prerequisite: A previous university course in mathematics is desirable but not required.

GGR 371S **Multivariate Statistical Methods of Geography** 2L
Prerequisite: GGR 270 & GGR 370F or equivalent

GGR 372S **Spatial Probabilities** 2L
Prerequisite: GGR 270 or equivalent

GGR 375F **Combinatorial Programming I** 2L
(May not be combined with †GGR 330 in any degree programme.)
Prerequisite: GGR 370F or equivalent

GGR 376S **Combinatorial Programming II** 2L
(May not be combined with †GGR 330 in any degree programme.)
Prerequisite: GGR 375F

GGR 390F **Field Methods I: Physical Geography** 2P
Emphasis is placed on work in the fields of geomorphology, pedology and land capability completed during the preceding summer in preparation for the camp,

and supplementary practical work during the fall term. The cost of the field camp to the student, including board and transportation, is about sixty dollars.
Prerequisite: GGR 100 & GGR 270; GGR 205F is required for work in pedology.
Co-requisite: For the 1970-71 session only, GGR 270 will be accepted as a co-requisite.

GGR 391F **Field Methods II: Economic and Social Geography** 2P
The course includes a one-week field camp in September, an assignment to be completed during the preceding summer in preparation for the camp, and supplementary assignments during the fall term. The cost of the field camp to the student, including board and transportation, is about sixty dollars.
Prerequisite: GGR 270 & GGR 220/224
Co-requisite: For the 1970-71 session only, GGR 270 will be accepted as a co-requisite.

COURSES OPEN TO FOURTH-YEAR STUDENTS

GGR 491 **B.A.Thesis** Arranged
The topic for the research project should be selected by the end of the Third Year and approved by the staff supervisor. Students are expected to begin work on the project during the summer preceding the Fourth Year and to complete most, or all, of their field work during this period. Two bound copies of the completed thesis must be submitted no later than March 15 of the Fourth Year. Students are required to discuss the completed thesis with an examining committee.
Prerequisite: Completion of third year of Honour Geography course.
Prerequisite and/or Co-requisite: 8 courses in Geography including GGR 100, 270, 320 and GGR 390F/391F

GEOLOGY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

GLG 100 **Introduction to Geology** 2L,2P
An introduction to the geological processes at work throughout geological time; continental drift; earthquakes, volcanoes and the structure and composition of the earth's interior; determination of geological time; the past climates and geography of the earth.
(May not be combined with GLG 120 in any degree programme.)

GLG 120 **Principles of Geology** 2L,1T,2P
A two-part lecture-laboratory course that examines the principles of physical and historical geology. Part I deals with the origin of the earth and the physical processes that operate on and in it. Part II traces the history of the earth from the sequence of physical and biological events revealed in the rock record with emphasis on paleontology and the concepts of geologic time.
(May not be combined with GLG 100 in any degree programme.)
Prerequisite: MAT A and XIII BIO/CHM/PHY

GLG 121F **The Geological Record of Evolution** 2L
An overview of the evolution of invertebrate, vertebrate and plant life in relation to time, space and environment.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

GLG 220 **Mineralogy** 2L,4P
A first course in mineralogy and crystallography; the study of minerals as inorganic chemicals in the earth's crust; the use of crystal chemistry to explain optical, morphological and other physical properties of minerals; the formation, occurrence and classification of minerals and their identification both micro- and macroscopically.
Prerequisite: CHM 120
Co-requisite or *prerequisite:* GLG 120

GLG 221Y **Geological Data Processing by Computer** 1L,2P
Applied mathematics, probability and statistics for processing geological data using computer methods.
(May not be combined with GGR 270/STA 232/STA 242/STA 252/ECO 220/POL 206/(PSY 200F & PSY 201S)/SOC 201 in any degree programme.)
Prerequisite: CSC 148F/Y/CSC 108F/Y
Co-requisite: GLG 120

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

GLG 320 **Petrology I** 2L,3P
The principles of petrology; the classification, description and interpretation of the sedimentary, igneous and metamorphic rocks. Microscopic petrography. Field work in first week of a 14-day field camp in the Tweed area immediately following the annual Third Year examinations.
Prerequisite: GLG 220

GLG 321 **Stratigraphy and Sedimentation** 1L,3P
The principles of stratigraphy with emphasis on tectonic and environmental interpretation of Precambrian and younger rocks. Laboratory; problems of applied stratigraphy; petrographic interpretation; correlation and lithofacies interpretation. A 7-day field camp immediately following the annual Second Year examinations.
Prerequisite: GLG 220
Co-requisite: GLG 320/322

GLG 322 **Tectonics** 1L,3P
Geometry of existing deformational structures in the earth's crust and reconstruction of their mechanical development. Field work in second week of a 14-day field camp immediately following the annual Third Year examinations.
Prerequisite: GLG 220
Co-requisite: GLG 321

GLG 323Y **Systematic Mineralogy** 2L
Principles of crystal chemistry and their application to the major mineral families.
Prerequisite: GLG 220

GLG 324 **Physical Geochemistry** 3L
Chemical thermodynamics, phase diagrams, electrochemistry, states of matter, kinetics with examples from natural and experimental mineral systems at a wide range of

temperatures and pressures.
Prerequisite: CEN 617Y/CHM 235 (or †CHM 221)/GLG 220

GLG 325 **Invertebrate Macropaleontology** 1L,3P
Morphology, evolution and stratigraphic significance of selected marine invertebrate groups. Laboratory: procedures in preparation, taxonomy, description, and statistical studies of populations and evolutionary trends.
Prerequisite: GLG 120. (ZOO 220/253 is recommended.)

GLG 326Y **Vertebrate Paleontology** 2P
A lecture and demonstration course on the geological history of vertebrate animals with emphasis on evolutional trends.
Prerequisite: GLG 120. (ZOO 250 or †ZOO 350 is recommended.)

GLG 370Y **X-ray Crystallography** 2P
Elementary x-ray diffraction methods and their use in geological studies.
Prerequisite: CHM 120, PHY 130

GLG 371Y **Rock and Mineral Analysis** 4P
Principles and practice of analytical chemistry as applied to the analysis of geological materials.
Prerequisite: CHM 120

GLG 372Y **Mineral Identification Laboratory** 2P
A continuation of the laboratory work in mineralogy of GLG 220.
Prerequisite: GLG 220

COURSES OPEN TO FOURTH-YEAR STUDENTS

GLG 420 **Petrology II** 2L,3P
Petrogenesis of the igneous and metamorphic rocks.
Prerequisite: GLG 320, 323, 324

GLG 421 **Mineral Deposits** 2L,3P
Theories of origin of mineral deposits; description of the world's important mineral camps.
Prerequisite: GLG 320, 324

GLG 423 **Thermodynamics of Mineral Equilibria** 2L
A chemical and thermodynamical approach to problems of high temperature and pressure phase equilibria. Application of experimental results to petrogenetic and hydrothermal problems.
Prerequisite: GLG 320, 324

GLG 424 **Stratigraphical Paleontology** 2L,2P
The study of life and stratigraphy. Paleoecology with special emphasis on limestone associations. Faunal succession and correlation.
Prerequisite: GLG 120, 325

GLG 425 **Micropaleontology and Palynology** 2L,3P
A course on the evolution of selected groups of plant and animal microfossils and their use in stratigraphy. The paleoecologic and distributional significance of palynomorphs on a local to world-wide basis is investigated in the laboratory and as seminar topics.
Prerequisite: GLG 325. BOT 230 (or †BOT 220) recommended but not required

GLG 426 **Advanced Vertebrate Paleontology** 1L,3P
Methods and techniques of vertebrate paleontology, including principles of taxonomy and nomenclature, evolutionary concepts, stratigraphical relationships, paleoecology, descriptive and biometric methods of study, use of the literature, preparation of manuscripts and illustrations; also the techniques of collecting, preserving, casting and photographing fossil vertebrates.
Prerequisite: GLG 326, ZOO 464 (or †ZOO 428)

GLG 427 **Structural Petrology** 2L,2P
Internal structures and textures of igneous, sedimentary and metamorphic rocks. Methods of quantitative analysis of grain fabrics.
Prerequisite: GLG 220, 322

GLG 428 **Petroleum and Groundwater Geology** 2L,3P
Occurrence of oil and gas in sedimentary basins and the geological conditions that govern their entrapment; ground water and its relation to the geology of drainage basins; fluid flow through porous media.
Prerequisite: GLG 321, 322

GLG 470 **Laboratory Research** Arranged
Laboratory Research stressing methods and experimental techniques applicable in geology. By arrangement with the department.
(May not be combined with PHY 416Y in any degree programme.)

GLG 490 **Approved Graduate Course.** Arranged
Any geology course listed in the graduate calendar.
Prerequisite: Approved by the Department of Geology.

GERMAN

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

NOTE: Detailed lists for the various courses are available from the Department.

GER 105 **Reading German** 3T
Training in reading scholarly German for students with little or no previous knowledge of German for whom this work is recommended or required by other departments or faculties.

GER 110 **Language Practice** 2T,2P
An intensive course in learning to write and speak German.
Prerequisite: XIII GER
Co-requisite: GER 120/130

GER 120 **Modern German Literature** 2L,1T
Selected works of modern German Literature with emphasis on the 20th Century.
Prerequisite: XIII GER

GER 130 **German Literature of the 19th and 20th Centuries (2 hrs); Language Practice (1 hr).** 2L,1T
A study of works from 19th and 20th Century German Literature to illustrate major trends; practice in active language learning.
Prerequisite: XIII GER

GER 201 **German Literature in English Translation** 2L
Selected works of modern German Literature in English translation.

GER 205 **Reading German-Intermediate** 3T
The continuation of a three-year sequence that begins with GER 105. An attempt is made to meet the needs of individual students.
Prerequisite: GER 105 or XIII GER

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

GER 210 **Language Practice** 3T
An intensive course in learning to write and speak German, for those students who are particularly interested in gaining an active command of the language.
(May not be combined with GER 231 (or †GER 241) in any degree programme.)
Prerequisite: GER 120/130 (or †GER 121)
Co-requisite: GER 220/230

GER 220 **German Literature of the Enlightenment and Storm and Stress** 2L,1T
A study of the works of the German *Aufklärung*, and of the young Goethe, the young Schiller, and their contemporaries.
Prerequisite: GER 120/130 (or †GER 121)

GER 230 **Romanticism (2 hrs); Language Practice (1 hr)** 2L,1T
A study of the Romantic period, including such figures as Novalis, Brentano, Kleist and Hoffmann. Language work of I Year is continued.
Prerequisite: GER 120/130 (or †GER 121)

GER 231 **Language Practice (2 hrs); Literature (1 hr)** 1L,2T
This course emphasizes an active command of German; it includes readings in German prose works.
(May not be combined with GER 210 (or †GER 242) in any degree programme.)
Prerequisite: GER 120/130 (or †GER 121)

GER 305 **Reading German—Advanced** 3T
The continuation of a three-year sequence through GER 105 and 205. An attempt is made to meet the needs of individual groups of students.
Prerequisite: GER 205 (or †GER 220) or equivalent

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS ONLY

GER 311 **Language Practice** 1T,1P
A half-course in Language Practice: written and oral work for Specialists or Non-Specialists.

GER 320 **The Age of Goethe** 2L,1T
The study of the works of the mature Goethe and Schiller.

GER 321 **Nineteenth Century Prose and Poetry** 2L,1T
This course includes major works of such authors as Heine, Stifter, Storm, Fontane, Keller, Meyer and Raabe.

GER 322 **Middle High German; Language and Literature** 2L,1T
Prescribed texts, supplementary texts. (This course is mandatory for German Specialists).

GER 410 **Language Practice** 3T
A full course in intensive language training. Available in either III or IV Year.
Co-requisite: GER 320/321/322/420/421/422

GER 411Y **Language Practice** 1T
A half-course in Language Practice: written and oral work.

GER 420 **Prose and Poetry; 1885-1945** 2L,1T
A consideration of significant writers in modern German Literature such as Nietzsche, George, Hofmannsthal, Thomas Mann, Rilke, Hesse, Kafka, Stadler, Heym, Trakl.

GER 421 **Modern German Drama** 2L,1T
An examination of the development of this genre from its beginnings in the 19th Century until the present day. This includes such authors as Nestroy, Büchner, Gerhart Hauptmann, Wedekind, Kaiser, Sternheim, Brecht, Peter Weiss, Durrenmatt.

GER 422 **Contemporary Literature; 1945 until the Present Day** 2L,1T
A study of post-war trends in German Literature. This will include such authors as Seghers, Nossäck, Böll, Celan, Aichinger, Borchert, Grass, Martin Walser, Enzensberger, and Kunert.

GREEK

See "Classical Studies"

GREEK AND LATIN LITERATURE IN TRANSLATION

See "Classical Studies"

GREEK AND ROMAN HISTORY

See "Classical Studies"

HEBREW

See "Near Eastern Studies"

HISTORY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

HIS 100 **An Introduction to the Methods and Problems of Historical Study** 1½L,2T
An introduction to history as a discipline rather than to the history of any country or period. A selection of major historical events, and themes from both European and non-European societies. Students consider the interpretation of historical sources and texts, and the concepts which historians use to analyze change. Instruction consists of lectures and tutorials in one-half the year and seminars in the other half. *R. V. Colman, M. R. Marrus, P. L. Thompson* and other members of the History Department.

HPS 100 **History of Scientific Ideas** 2L,1T
See description under "History and Philosophy of Science and Technology".

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

HPS 201 **History of Technology and Engineering** 2L,1T
See description under "History and Philosophy of Science and Technology".

HIS 220 **The Shape of Medieval Society** 2L,1T
A topical survey of economic, political, religious and educational ideas and institutions of the Middle Ages. The narrative of political events is kept to a minimum, serving only to provide the necessary context for institutions and ideas. From the late Roman period to the fifteenth century. *R. V. Colman, T. A. Sandquist.*

HIS 230 **England: Fifteenth to Seventeenth Century** 2L,1T
England (with some attention to the rest of Britain) from the mid-15th through the 17th century, with stress on the "hinge" century from the Reformation to the Civil War. The approach is socio-economic and cultural as well as political. *E. E. Rose, M. Finlayson.*

HIS 231 **Britain: Nineteenth and Twentieth Centuries** 2L,1T
The major themes of British history from the late 18th century; the emergence of industrial society; the fate of aristocracy, religion, cultural and intellectual change; external relations, constitutional development and political history. *T. O. Lloyd, J. B. Conacher.*

HIS 232 **The British Imperial Experience** 2L,1T
Among the themes to be emphasized are: the nature and exercise of power; the reasons for imperial expansion; the colonial system at work; racial antagonsim and accommodation; the rise of nationalism in the non-European world. *A. P. Thornton.*

HIS 240 **Early Modern Europe, 1500-1815** 2L
A general survey of the political, social, and economic history of Europe from the period of the great discoveries through the Napoleonic era. Topics to be discussed include: the political and religious struggles of the 16th century; overseas expansion; the development of royal absolutism; social change and the crisis of the ancient regime; the impact of the Enlightenment; the French Revolution and its effects. *J. M. Estes, D. C. Higgs.*

HIS 241 **The Age of European Hegemony, 1815-1945** 2L,1T
Main themes in the history of Europe. Attention paid less to national histories than to European institutions, social classes and ideas, industrialization and urbanization, cultural development, international relations, imperialism, war and peace and the shifting position of Europe in the world balance. *R. A. Spencer, J. C. Cairns.*

HIS 250 **Russia Since the Ninth Century** 2L,1T
The Russian people, state and culture, with emphasis on major institutional social and ideological changes. First term: the origins of Russian history, paganism and Christianity, Mongol influences, the forging of Muscovite autocracy, westernization to 1800; Second term: the imperial regime, the radical intelligentsia, the Revolution and the establishment of the Soviet regime, the Stalin revolution in agriculture, industry and society, foreign relations. Reading in primary and secondary materials. *H. L. Dyck.*

HIS 260 **Pre-Confederation Canada** 2L,1T
Studies in the major problems and themes of the history of Canada before Confederation. *M. S. Cross, W. J. Eccles, P. Rutherford.*
(May not be combined with HIS 262 (or †HIS 300) in any degree programme.)

HIS 261 **Post-Confederation Canada** 2L,1T
Studies in the major problems and themes of the history of Canada after Confederation. *J. M. Bliss, R. C. Brown, P. Rutherford.*
(May not be combined with HIS 262 (or †HIS 300) in any degree programme.)

HIS 262 **History of Canada** 2L
A survey of the political, social and economic history of Canada, topically treated, from 1663 to 1967. *R. Bothwell, G. Patterson.*
(May not be combined with HIS 260/261 in any degree programme.)

HIS 270 **The Development of American Thought and Society from Colonial Times** 2L,1T
Main trends in intellectual and social history, with attention given to such topics as Puritanism, the Enlightenment, the reform impulse, education and science, the American mind during and after the Civil War, immigration, from the Age of Innocence to the Age of Anxiety. *W. H. Nelson, W. B. White.*
(May not be combined with HIS 271 in any degree programme.)

HIS 271 **American History Since 1763** 2L,1T
Major themes since the American Revolution, including independence and political reorganization, political parties, territorial expansion, the sectional crisis, industrialization, progressivism, the United States as a world power. *R. D. Accinelli, G. M. Craig.*
(May not be combined with HIS 270 in any degree programme.)

HIS 280 **Selected Topics in Chinese and Japanese History** 2L,1T
The lecture portion of the course is the same as that of EAS 102. The tutorial portion is different. *J. J. Gerson, P. L. Thompson.*
(May not be combined with EAS 102 in any degree programme.)

HIS 290 **Latin America: Conquest to Revolution** 2L,1T
Introduction to the economic, political and intellectual history of Latin America from roughly 1400-1960. Emphasis placed on: the contact of European and non-Western

cultures, the development of institutions such as latifundia, the crisis of independent nationhood, the struggle for economic development, and the contemporary revolutionary crisis. *T. M. Brady, H. Marcus.*

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

HIS 320 **Science in Western Intellectual History** 2L,1T
Development of scientific thought from the 17th century to 1925 relating the science to contemporary movements in philosophical and political theory. Prevailing scientific ideas in France, Britain, Germany, Holland and Italy, relating these to the social, economic and political theories. The organization of science, the dissemination of ideas through scientific societies and the universities, and the relations of science and religion. *J. W. Abrams, B. S. Drake, T. H. Levere, B. Sinclair, M. P. Winsor.*

JAH 324 **Peasants and Feudal Institutions** 1L,2T
A comparative study of medieval European and other historical and contemporary peasant societies with reference to the development of various social, economic and political institutions, including military feudalism. *R. V. Colman, W. Weissleder.*

HIS 325 **Politics and Society in Medieval England** 2L,1T
Freedom and authority in the context of social development (family, lordship, class structure, nobility, bourgeoisie, revolutionary movements) from the Anglo-Saxons to the Yorkists. Interplay of social and political forces stressed where appropriate. Translated documents are used to enable students to form their own opinions on contentious issues. *M. R. Powicke.*

HIS 327 **The Byzantine Empire, 330-1453** 2L,1T
An introduction to the history, institutions, and culture of the East Roman state, from the foundation of Constantinople to its capture by the Turks. Some attention will also be paid to neighbouring peoples. *B. Barmann, W. A. Goffart.*

HIS 335 **Religion and English Society, 1785-1875** 2T
Major themes of religious history set within a systematic examination of secular society. The course begins with a consideration of the fundamentals of the sociology of religion and then discusses the relationship between religion and class structure, the social policies of church and sects, the problems of education and science, the nature of revivalism and anti-catholicism and the growth of unbelief. *J. P. B. Kenyon.*

HIS 336 **Eighteenth Century England** 1L,1T
Emphasis will be placed on the development of political institutions after the Revolution of 1689, and on problems in social history, especially changes in the social structure, population distribution and change, poverty, crime, and the social basis of politics. *J. M. Beattie.*

HIS 337 **Modern India Since 1700** 2T
The decline of the Mughal Empire, the eighteenth century struggle for power, British conquest, and the emergence of independent India. Cultural and intellectual change, institutional development, social revolution, and the vagaries of the economy are the major themes. *M. Israel.* (Not offered 1970-71)

HIS 338 **From Empire to Welfare State** 1L,1T
This course covers British history from the beginning of the 20th century, with special emphasis on the contraction of British power overseas and the development of government power to provide effective social services. *T. O. Lloyd.*

HIS 341 **Italy Since 1789** 1L,2T
The unification of the Italian peninsula, the liberal regime (1870 to 1922), and the Fascist era. Liberalism, nationalism, imperialism, and church-state relations are the major themes. The socio-economic problems that caused emigration and the impact of emigration are also studied. *R. F. Harney.*

HIS 342 **European Intellectual History** 3L,1T
The ideas, attitudes and myths of representative intellectuals in Europe, 1815-1914. Social and historical context of intellectual trends are considered. Representative thinkers include St. Simon, Fourier, Comte, Hegel, Feuerbach, Marx, Schopenhauer, Nietzsche, Mill, Darwin, Freud. *J. Kornberg.*

HIS 343 **Reformation Europe, 1517-1559** 2L (Second Term 2T)
Main emphasis will be on Germany and Switzerland, though the spread of the Reformation to other countries will also be dealt with. Fundamental approach in the lectures will be political and constitutional, social and intellectual matters being considered within that context. In the tutorials the main emphasis will be on the views of the various reformers on political and social questions (e.g., church and state, resistance to tyranny, economic problems, etc.). *J. M. Estes.*

HIS 345 **France and Her European Neighbours, 1589-1715** 2T
Themes in European civilization; absolutism, representative assemblies, social structure, economic life, religion and rationalism, violence both domestic and international. These will be dealt with in comparative terms, concentrating mainly on France, Holland and England. *J. Pearl.*
Prerequisite: Reading knowledge of French useful, though not essential.

HIS 346 **The Revolutionary Idea in France** 2T
Readings in commentators on political and cultural change in French society, emphasizing socialist, liberal, conservative, traditional and romantic thinkers and revolutionary historiography. *D. Higgs.*
Prerequisite: Reading knowledge of French essential.

HIS 349 **European Urban History** 1L,1T
Problems in European Urban History from the Middle Ages through the Industrial Age. Emphasis on the changing character of urban society during this period, and on the changing relationship of the urban environment to society at large. *M. R. Marrus.*

HIS 350 **East Central Europe (including the Balkans) to 1939** 2L,1T
First term: the medieval kingdoms of Poland, Bohemia, Hungary and the Balkans; Renaissance, Reformation, and Counter-Reformation; decline and national revival to the beginning of the nineteenth century. Second term: partitioned Poland, nationalism in the nineteenth century; World War I, the Peace Settlement and the interwar years. *A. Rossos, P. Brock.*

HIS 361 **Strategies of Canadian Economic Development, 1850-1970** 3L
Approaches to economic development in Canadian history; their implications and consequences. The establishment of networks of transportation and communication, the growth of industry, the role of government in economic affairs, class and group conflicts over economic goals. *J. M. Bliss.*

HIS 362 **Problems in Canadian Nationalism** 3L
Studies in French-Canadian Nationalism and English-Canadian Nationalism from the Conquest to the present. *P. Rutherford, J. P. Wallot.*

HIS 363 **Twentieth Century Canada** 2L,1T
Studies in major problems and themes of twentieth century Canadian history. *R. Bothwell.*

HIS 364 **Canada and War: 1868-1967** 2T
A study of the social and political impact of war and military preparedness on Canada from the first Dominion Militia Act to the unification controversy. *D. Morton.*

HIS 366 **Studies in Late Victorian Canada, 1850-1900** 2T
The development of regional communities and a national consensus in British America, largely after Confederation, with particular attention to popular attitudes and ideology. Such topics as political philosophies, political leadership, pluralism, social doctrines, economic nationalism, sectionalisms, continentalism and imperialism, ultramontanism and the rouge challenge, Anglo-Saxon racism. *P. Rutherford.*

HIS 367 **Canadian-American Relations** 2T
Detailed and comprehensive coverage of the diplomatic relations between Canada and the United States from 1783 to 1911. Attention given to the economic, social and cultural relations between the two countries. *P. C. T. White.*

HIS 368 **The Canadian West** 2T
The prairie west since the mid-nineteenth century. The focus will be upon the emergence of a distinctive region and its place in Canadian development. The approach will be broadly social and cultural. *C. Berger.* (Not offered 1970-71)

HIS 370 **The American Political Tradition** 2L,1T
Conflict and consensus in American political history from the Revolution to the present time. An attempt is made to analyze, and explain the persistence of the ideological and pragmatic strains in American politics. The course deals with American foreign relations as well as with domestic politics. *W. H. Nelson.*

HIS 371 **Evolution of American Nationalism** 1L,2T
This course will range over the whole period of American history, but will concentrate on the years from Independence to the end of the Civil War. From time to time a comparative approach will be used in order to place American nationalism in a larger setting. Travel accounts and literary materials will be used, as well as the works of leading figures such as Jefferson and Lincoln. *G. M. Craig.*

HIS 372 **The United States in the Twentieth Century, 1895-1970** 3L
A survey and analysis of the political, economic and social institutions, and foreign policy commitments of the United States.

HIS 374 **The South Before the Civil War: Black and White** 2T
Social structure and social conflict in the old South, the development of Southern culture, the relationship between ideology and institutions, slavery as a social and economic system, the political economy and practices of the South, and the growth of Southern nationalism and separatism, from the colonial period to the Confederacy. *A. N. Sheps.*

HIS 376 **American Labour History** 2T
The study of the personalities, institutions and ideas of the American labour movement from the beginnings of industrialization to the present. Will include subjects like the reform tradition in American labour, socialism, and the industrial workers of the world, as well as more mundane questions like the growth of the American Federation of Labor. *W. M. Dick.*

HIS 378 **Ethnicity in American History** 2T
An examination of the migrations of ethnic minorities to America, and of their assimilation into American life as well as their cultural impact. The histories of the blacks and of American Indian tribes will also be studied, as well as present prospects for these minority groups. *W. B. White.*

HIS 380 **Modern China since 1550** 2L,1T
Modern Chinese history with emphasis on the interaction of intellectual, social, economic and political factors. Second term: China in revolution culminating in the establishment of the People's Republic of China and subsequent developments. *J. Gerson, J. L. Cranmer-Byng.*

JMC 300 **Modern China in Revolution** 2T

HIS 381 **Modern Japan since 1550** 2L,1T
An extensive survey of Japanese society from ca. 1550 to the present: lectures and readings are intended to familiarize students both with the nature of "pre-modern" Japan, and with the major historical changes and attendant cultural problems that have accompanied Japan's modernization in the 19th and 20th centuries. *P. L. Thompson.*

HIS 391 **Problems in Latin American History** 2L,1T
This course will concentrate on two themes, comparative slave systems in the Western Hemisphere and the phenomenon of strong man rule *(cuadillo)* in nineteenth and twentieth century Latin America. *R. Mellafe.*

COURSES OPEN TO FOURTH-YEAR STUDENTS

HIS 426 **Medieval Intellectual History** 2T
An introduction to Western thought and education from Augustine to Occam. *N. P. Zacour.*
Prerequisite: Previous course in medieval history. (Available to Third-Year students, by permission of the instructor)

HIS 428 **Selected Topics in English Medieval History** 2T
Studies in the social, legal and political history of medieval England. *T. A. Sandquist.*

HIS 434 **English Government and Society in the Seventeenth Century** 2T
Attention will be focused on the major political developments in England during the period with special emphasis on the two decades that envelope the Civil War and Interregnum. The course will aim to relate to these political developments the major social and economic changes in England from the Reformation to the accession of George I. *M. G. Finlayson.*
Prerequisite: HIS 230 or its equivalent

HIS 436 **Studies in Victorian England** 2T
An examination of a series of political crises, such as those associated with the repeal of the Corn Laws, the Crimean War, the Second and Third Reform Acts and Gladstone's Home Rule Bills. Students will be given wide latitude in the choice of subjects for research papers. *J. B. Conacher.*

HIS 440 **Social Groups in Sixteenth-Century Europe** 2T
A study of peasant communities, the lower orders in the cities, women and youth in Europe from the end of the fifteenth to the early seventeenth century. Though France will be the basic geographical unit to be examined, we will look at other European countries to expand our sources and for comparative purposes. *N. Z. Davis.* (Not offered 1970-71)
Prerequisite: A reading knowledge of *one* European language (i.e., French or German or Italian or Spanish).

HIS 444 **The French in the Contemporary World, 1871-1962** 2T
Major topics and themes in the political, social, diplomatic and intellectual history of modern France. First term devoted to preliminary exploration and reading on specific aspects agreed upon between the instructor and the students. *J. C. Cairns.*
Prerequisite: A reading knowledge of French or approval of the instructor.

HIS 445 **Revolution and Counter-revolution in Modern Europe** 2T
Selected topics in the history of European revolutions since 1789, examining the political, economic, social and intellectual ingredients of revolutions during this period. Seminar discussion will focus upon contemporary source materials, the historiography of European revolutions, as well as an evaluation of the contributions of modern sociological theory. *M. R. Marrus.*
Prerequisite: The equivalent of HIS 241 or permission of instructor.

HIS 446 **The Age of Enlightenment** 2T
The period 1648-1800, stressing the development of ideas, particularly the conflict between rationalism and Christian views. The biographical approach is used so that the main exponents of the ideas under discussion occupy the centre of the stage. *R. M. Saunders.*

HIS 447 **Studies in Nineteenth Century Intellectual History** 2T
Major French, German and English intellectuals, 1815-1914. Focus on views about morality, work, love, political activism, political quietism, individualism, the social group, the state, placed in their historic and social context. *J. Kornberg.*

Prerequisite: At least one University course in modern European history or the equivalent.

HIS 448 **Aspects of German History since 1806** 2T
An examination, in topical rather than chronological form, of some of the main trends of German history since the end of the Holy Roman Empire. *R. A. Spencer.*
Prerequisite: HIS 241 or permission of instructor. A reading knowledge of German is helpful, though not essential.

HIS 449 **Co-operation & Conflict in the International Community, 1871-1941** 2T
The political, economic, ideological and other conditions which made for international stability and instability. Discussion of major writings on peace and war and selected studies on the peaceful settlement of international disputes and on resort to war. Emphasis on the Concert of Europe and the League of Nations, the causes of the two World Wars, and problems of peacemaking and peace-enforcement after World War I. *H. I. Nelson.*

HIS 456 **Muscovite and Imperial Russia: Self-Images and Foreign Images** 2T
Variety and change in perceptions of Russia as a culture and power as reflected in the writings of 1) Russians and 2) foreign travellers, artisans, mercenaries, scholars and diplomats. Deals with questions of historiography, the social sciences in historical research, bibliography, and the craft of historical research and writing. *H. L. Dyck.* (Not offered 1970-71)

HIS 458 **Topics in Russian and Soviet Foreign Policy** 2T
Emphasis on the relations of Russia and the U.S.S.R. with Western Europe, Asia, and particularly with Eastern Europe, in the nineteenth and twentieth centuries. Examination of the impact of ideologies, religion, strategic needs, and domestic politics, on the foreign policy aims of Imperial Russia and the Soviet Union. *A. Rossos.*
Prerequisite: HIS 250

HIS 459 **Studies in Modern Russian History** 2T
Details to be announced.

HIS 461 **Politics and Society in Canada and the United States** 2T
A comparative study of selected topics from the economic, social and political history of Canada and the United States between 1860 and 1940. Among the topics discussed will be the growth of national sentiment, the development of national policies, industrialization, agrarian protest movements, the reform of education, and responses to conditions of war and depression. *R. C. Brown.*

HIS 462 **Canadian Regional Societies, 1821-1896** 2T
Certain themes within the broad framework of a study of the development of regional communities in British North America: the growth and nature of leadership elites; the role of the middle class; migration patterns; the clash of developmental philosophies in Canada; the role of metropolitan centres; the causes and results of social disorder. *M. Cross.* (Not offered 1970-71)

HIS 463 **Metropolis and Frontier in Canada, 1815-1914** 2T
A selective study of the interplay of historical forces stemming from metropolitan

centres, inside or outside Canada, and those emanating from frontier areas of basic resource development. The approach is chiefly social and regional, but economic, political and cultural factors are also considered in examining the reciprocal relations between major urban centres and their hinterlands in Canada. *J. M. S. Careless.* (Not offered 1970-71)

HIS 464 **Quebec and Lower Canada, 1760-1840** 2T
The Conquest and its consequences. The Royal Proclamation. The Quebec Act and the American Revolution. The Commercial Revolution. The War of 1812. Ethnic, political, social, economic, ideological and religious struggles. The influence of revolutionary and democratic ideas. The rebellions. Durham's Report. *J. P. Wallot.*
Prerequisite: A reading knowledge of French.

HIS 465 **John Strachan's Canada, 1800-1867** 2T
Primary focus on the nature, function and interrelationships of "interests and ideologies" in an undeveloped but developing community. Politics, where not clearly related to social and economic conflict, will be subordinate. *G. Patterson.*

HIS 467 **The Governing Elite in Twentieth Century Canada** 2T
Studies in the sociology of power and bureaucracy in twentieth century Canada. *R. Bothwell.*

HIS 468 **Canada in the Second World War** 2T
This course, while dealing in outline with the operations and organization of Canadian forces in 1939-1945, also deals with political and economic aspects of the wartime history of Canada, and with the war's influence on Canada's relations with the Commonwealth and the United States. *C. P. Stacey.*

HIS 478 **Topics in Twentieth Century American Diplomacy** 2T
An introduction to the major foreign policies of the United States from the 1880's to the present, emphasizing the motivations and patterns of action of policy-makers. Primarily a reading course. *R. D. Accinelli.*
Prerequisite: HIS 270/271/370/372

HIS 479 **The United States from the Great Depression to the Great Society** 2T
A comprehensive survey and analysis of the political, economic and social institutions, and foreign policy commitments of the United States, 1933-1967. *W. C. Berman.* (Not offered 1970-71)
(May not be combined with HIS 372 in any degree programme.)
Prerequisite or *Co-requisite:* HIS 270/271/370

MC 400 **Nationalism and Social Change in Contemporary China** 2T

IS 482 **China's External Relations, 1834-1960** 2T
Chinese theory and practice in the conduct of external relations from the late Ch'ing through the Republican and into the Communist era. The main emphasis is placed on changes in the Chinese attitude towards external relations. Starting from the tributary system the course traces the effect of the impact of western diplomatic ideas and procedures on China, and shows the gradual emergence of China from semi-isolation toward a fuller participation in international relations. *J. L. Cranmer-Byng.*
Prerequisite: HIS 380 or permission of instructor

HIS 483 **Collapse of the Chinese Empire, 1870-1911** 2T
The breakdown of the traditional imperial structure–both internal and external factors. Primary emphasis: the disruptive forces which predominated in the period. Some attention given to new forces like "nationalism" and the intellectual "renaissance." *J. Gerson.*
Prerequisite: HIS 380 or permission of instructor

HIS 484 **Selected Topics in Modern Japanese History** 2T
Although the content varies somewhat from year to year, work normally involves the study and discussion of selected problems related to the economic and cultural modernization of Japan since 1868. Students are encouraged to explore questions and issues in which they have developed special interests. *P. L. Thompson.*

HIS 485 **The Problem of Government in Classical Greece** 2T
Town, State League in relation to the individual. The course studies forms and ideas of socio-political organization, concentrating on Athens from Solon, founder of her democracy, to Socrates, its victim. The relevant parts of the histories of Herodotus and Thucydides, Aristotle's *Constitution of Athens,* and selections from other works will be read in translation. Either HIS 485 or HIS 486 will be offered in 1970-71 depending on enrolment. *M. B. Wallace.*

HIS 486 **From Republic to Principate** 2T
Roman republican government was unable to meet the administrative, economic, military and intellectual challenges of a Mediterranean-wide and multi-cultural empire. A series of would-be saviours, ranging from radical democrats to warlords of "Left" and "Right," sought to devise a more effective alternative. The Augustan settlement, an efficient military monarchy lurking decorously behind a traditional republican facade. Either HIS 485 or HIS 486 will be offered in 1970-71 depending on enrolment. *G. V. Sumner.*

HIS 491 **Latin America: Social History** 2T
Selected topics in the social history of Latin America with stress on comparison with other areas of the world. Some of the topics to be discussed include: population movements, ideology and society, revolutionary social movements. *T. Brady.*
Prerequisite: One course dealing with Latin America or permission of instructor.

HIS 492 **Major Themes in Brazilian History** 2T
Selected topics in the history of Brazil from the colonial period to the present. These include the structure of colonial society, the "boom and bust" economy, slavery, immigration, nationalism, industrialization, and the role of the military. *H. A. Marcus.*
Prerequisite: One course dealing with Latin America or permission of instructor.

HIS 497 **Philosophy of History** 2T
In the first term, a study of history as a form of enquiry, especially of its concepts of explanation and objectivity. In the second term, a study of some classical histories to illustrate the concepts discussed during the first semester. *T. D. Langan.*

HISTORY AND PHILOSOPHY OF SCIENCE AND TECHNOLOGY

Courses Offered by the Institute for the History and Philosophy of Science and Technology

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

HPS 100 **History of Scientific Ideas** 2L,1T
The evolution of scientific ideas and methods from early times to the present, studied through the works of such men as Galileo, Newton, Darwin and Einstein, and in relation to the societies in which they lived. Roots of the position of science in modern culture will be examined. *T. H. Levere, M. P. Winsor.*

HPS 201 **History of Technology and Engineering** 2L,1T
An historical treatment of the development of tools and techniques from their earliest application to current times. Points of contact with theoretical and scientific thought will be examined along with interactions between technological innovation and society. (Arts and Science students only.) *J. W. Abrams, T. Sinclair.*

HYGIENE

Courses Offered by Members of the School of Hygiene

MICROBIOLOGY

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

MBL 200 **Introductory Microbiology** 2L,2P
A lecture and laboratory course designed to serve as an introduction to the study of bacteria, fungi, viruses and rickettsiae. The properties of the organisms such as their structure, growth, metabolism and nutrition, immunity mechanisms and pathogenicity will be covered. Selected species will be used to demonstrate the significance of microorganisms in medicine, industry and agriculture.

MBL 220 **General Microbiology** 2L,4P
Historical development of microbiology; range of microorganisms; bacterial structure and ultrastructure; measurement and kinetics of growth; physiology and nutrition of bacteria; antigen-antibody reactions; bacterial taxonomy and classification; bacteriophage and animal viruses; genetic transfer. Microbiological aspects of water, milk, food products, soil, industrial processes and epidemics will be examined.
Prerequisite: BIO 100/120
Co-requisite: CHM 235

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

MBL 300 **Applied Microbiology** 2L
Practical application of microbiology to agriculture and health sciences, and in the fermentation, food and dairy industries. Isolation, differentiation and classification of

these microorganisms, and identification of pathogenic bacteria and yeasts will be emphasized.
Prerequisite: MBL 200/220

MBL 320 **Microbial Physiology** 2L,3P
Thermodynamics and energy of bacterial growth; the environmental parameters of growth and the interrelation of macromolecules during growth. Synthesis and degradation of polymers. Autotrophic microorganisms and heterotrophic metabolism will be examined along with the modifications of physiology and metabolism following bacteriophage infection.
Prerequisite: MBL 200/220
Co-requisite: BCH 320/321

MBL 321 **Microbial Structure** 1L,3P
Structure of bacteria, mycoplasmas, bacteriophages and animal viruses, and of normal and virus-infected cells. Techniques of electron microscopy wil be taught.
Prerequisite: MBL 200/220

JBM 350 **General Virology** 1L,3P
A course designed to provide an introduction to the study of viruses. Lectures will cover both fundamental and applied aspects of the viruses of animals, insects, plants and bacteria. The laboratories will provide instruction in basic techniques used in the study of viruses. *J. B. Campbell, G. B. Orlob.*
Prerequisite: None (MBL 220/BOT 240 (or †BOT 233) recommended.)

COURSES OPEN TO FOURTH-YEAR STUDENTS

MBL 400 **Pathogenic Microbiology** 2L
A lecture and seminar course on the phenomena of infection by pathogenic bacteria, rickettsiae and viruses.

MBL 420 **Biology of Animal Viruses** 1L,2T
Lectures will cover systematically the molecular biology of animal viruses and the cellular biology of viral infections. There will also be seminars in which papers and topics of special interest will be analysed. Students will be required to participate actively in these seminars, and will be required to give one or two short talks on selected topics.
Prerequisite: JBM 350 (†MBL 370) & BCH 320/321

MBL 421 **Immunology** 1L,2P
A lecture and laboratory course on the basic principles of immunology and immunochemistry, including antigen-antibody reactions, chemical nature of antigens and antibodies, hypersensitivity, and blood groups.

MBL 422 **Microbiological Statistics** 2L
An intermediate lecture and practical course dealing with the application of statistical methods to problems in microbiology. Some use of computer programmes is made.
Prerequisite: STA 232/242

MBL 423 **Advanced Topics in Microbial Biochemistry** 3T
A combined seminar-lecture course given by members of the department on selected topics relating to microbial metabolism and molecular biology. The course may include a research project.
Prerequisite: MBL 320 (†MBL 370) & BCH 320/321

MBL 424 **Microbial Genetics** 2L,2P
A lecture and laboratory course covering the structure and function of the genetic material; mutations in bacteria and their viruses; the genetic code and transfer of information in bacteria; sex factors and episomes; control of protein synthesis and function.
Prerequisite: MBL 220 (or †MBL 370). (BCH 320/321 recommended.)

MBL 425 **Project in Biological Sciences** 7P
Essential laboratory training for students specializing in Microbiology as well as any others wishing insight into microbiological techniques.
Prerequisite: MBL 300/320/321/JBM 350 (or †MBL 370)

PARASITOLOGY

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

ZOO 252 **Parasites and Parsitism** 2L,3P
See description under Zoology.

COURSES OPEN TO FOURTH-YEAR STUDENTS

Additional courses offered by the Department of Parasitology in the School of Hygiene are available, namely:

PST 403S **Fine Structure, Physiology and Biochemistry of Parasites** 2L
(1503)

PST 407 **Arthropods as Parasites and Vectors** 2L,2P
(1507)

PST 409 **Helminthology** 2L,2P
(1509)

For details, students should consult the entries of the Department of Parasitology in the Calendar of the School of Hygiene under the numbers indicated above in parentheses; ZOO 252 is recommended as preparation.

INDIAN STUDIES

See "East Asian Studies"

INDUSTRIAL ENGINEERING

Offered by Members of the Faculty of Applied Science and Engineering

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

IND 424 **Operational Research** 2L,2T
The course provides an introduction to the methodology, techniques and applications of Operations Research. The processes of model building and solution are illustrated, throughout the course, using simplified case studies. These studies will include examples of decision problems of inventory, replacement and reliability, allocation, queueing, competition, sequencing and coordination. The course will also include introductions to the mathematical techniques of linear and integer programming, dynamic programming, branch and bound methods, simulation CPM-PERT and Markov processes.
Prerequisite: †STA 242/252/ECO 220

IND 429F **System Simulation** 2L,1½T
Computer simulation models. The theory will be developed and applied to problems in the design and analysis of queueing, inventory, maintenance, reliability, transportation, and resource allocation systems.
Prerequisite: †STA 242/252 & CSC 148Y/238F/ECO 222

IND 430S **Information and Optimization** 2L,1½T
Introduction to information theory; topics in optimization theory.
Prerequisite: MAT 140/225 & MAT 230/234/235/239/250

IND 476F **Stochastic Models** 2L,1½T
Fundamentals of stochastic processes and their application to mathematical models of Markov decision processes, queueing, replacement, inventory, etc.
Prerequisite: †STA 252 & MAT 230/244F

IND 483S **Mathematical Programming** 2L,1½T
Linear and non-linear programming. Integer programming.
Prerequisite: †MAT 140/225

INNIS COLLEGE

Courses Sponsored by Innis College

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

CIN 201 **Science, Technology and Humanity** 2L,1T
A lecture-seminar course which explores the implications of scientific progress and its effects on human life. In 1969-70, the class devoted its attention to man's responsibility to his environment, with special reference to pollution.

CIN 202 **Canadian Culture and Society** 2L,1T
An introduction to aspects of Canadian culture and society, arranged for overseas

students for whom English is a second language. The facilities of the Innis College Writing Laboratory will be made available for the preparation of written and oral reports.

CIN 203 **The Contemporary Social Environment** 2L,1T
Selected topics related to the problems of living in the modern world will be examined by the students enrolled in this course, working either individually or in groups. Specialists in such areas as Sociology, History, Medicine, and Religion will give lectures and provide tutorial assistance.

CIN 204 **Modern Arts (The Cinema)** 2L,1P
A critical examination of the language, literature and techniques of cinema.

CIN 205 **The Philosophy of Music Perception** 2L,1T
A study of tonal phenomena in music. Recent developments in acoustics and the psychology of sound will be examined in the light of concepts derived from the philosophy of art (aesthetics). Group projects will be undertaken dealing with the perception of pitch, key, scales, temperament, and the microstructures of music.

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

CIN 300 **Education and Society** 1L,2T
An analysis of critical problems and issues in education and the contributions of the major disciplines in their resolution. Current educational thought and practice will be emphasized, with particular reference to the Province of Ontario.

CIN 400 **Selected Topics in Education** 2T
A seminar course dealing with the relationship of a particular discipline (Economics, History, Philosophy, etc.) to the study of education.
Prerequisite: CIN 300 (or †EDN 300)

INTERDISCIPLINARY COURSES SPONSORED BY THE FACULTY

Students who feel they have preparation equivalent to the stated prerequisites (or co-requisites) may apply to the appropriate course chairman for admission.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

FSC 200 **Communications** 2L,1T
This is the first in a projected three-year sequence of courses which will apply an interdisciplinary analysis to the act of communication in its many forms. Particular emphasis will be placed on communication among and between humans. Aspects to be considered include the nature of verbal communication, gesture and unconscious communication, perversion of communication, and failure of communication. *B. Brainerd.*
Prerequisite: JAL 100 (or †LIN 100) or equivalent

FSE 200 **Environmental Studies** 3L
An interdisciplinary approach to issues arising from the interaction of living organisms,

especially man, with their environment. Major theories, methods, and empirical findings of the relevant social and life sciences will be presented in the context of current environmental problems, such as pollution or food production. This course will serve as an introduction to later courses involving detailed examination of specific problems. Disciplines involved will include Biology, Geography, Law and Political Economy.
(*Note:* the 300 series course in this sequence will be introduced in 1970-71; the 400 series course in 1971-72.)
Prerequisite: One course in a Social Science and/or Life Science is strongly recommended as preparation.

FSE 300 **Environmental Studies** 2T
A series of seminars and workshops concerned with intensive study of major problems arising from man's interaction with his environment. Problems to be studied may include those arising from urbanization as well as those involving natural resources. FSE 200 is strongly recommended as preparation for this course.
Prerequisite: FSE 200 or equivalent

FSM 200 **Modernization and Community** 2L,1T
This sequence is an interdisciplinary approach to two central aspects of modern society; disruptive social changes and their relationship to the cohesion of communities. The central theme of the lectures will be how various forces such as urbanization, industrialization, the rise of modern bureaucracies, and increases in the scale of society transformed the traditional community. Weekly tutorials will discuss problems arising from the lectures and assigned readings. Contributing disciplines will include History, Sociology, Geography, Economics, Political Science. The course will serve as an introduction to later courses involving detailed study of topics. *A. Rotstein.*
(*Note:* the 300 series course in this sequence will be introduced in 1970-71; the 400 series course in 1971-72.)
Co-requisite: One course in ANT/ECO/GGR/HIS/POL/SOC

FSM 300 **Modernization and Community: Seminar Workshops** 2T
Introduced this year as the second level in the FSM sequence, the seminars are small-group meetings to consider some of the issues raised in FSM 200. The seminars will take up specific questions on the relationship between social change and the quality of community life, for example urbanization and urban problems, or the role of violence in the modern world. Substantial independent research will be required of the students. Each of the seminars will be supervised jointly by at least two staff members. The seminars meet once weekly for two hours.
Prerequisite: FSM 200 or equivalent

FSR 200 **Revolution as Cultural Transformation** 2L,1T
A study of periods of profound but generally non-violent change which continue to influence modern society: e.g., fifth century Greece, Christianity vs. Classical culture, the Renaissance, and the Reformation; interaction of political, economic and cultural factors. *J. Boake.*
(May not be combined with †FSR 100/200 in any degree programme.)
Prerequisite: GRH 100/201 (or †GRH 100/190)/HIS 100 or equivalent

FSR 300 **Revolution as Social Upheaval** 2T
An analysis of violent revolutionary change as observed in concentrated form in the French and Russian revolutions. Stress will be laid on the interaction of the political, social, economic, and intellectual ingredients of revolution in an attempt to understand the mechanisms of radical and profound social transformation.
(May not be combined with HIS 445 (or †HIS 348) in any degree programme.)
Prerequisite: HIS 100 or equivalent

FSR 400 **Contemporary Revolutionary Change** 2T
Consciously directed change, selected and researched in teams with a view to integrating knowledge about contemporary revolutions of all kinds. Prerequisites: background in studying historical models of revolutionary change, in participating in the design of a course, and in working with others at self-motivated and self-directed study with resource people. *B. S. Alton*
Prerequisite: FSR 300 (or †FSR 200) or equivalent

FST 200 **Theory, Method and Practice** 2L,1T
This course is the first of three concerned with knowledge as it is developed and applied in different fields of human inquiry. Focus will be on comparison of conceptual structures and methodology fundamental to the social and natural sciences. Topics include formal systems, explanation, induction and value judgments. *W. R. C. Harvey.*
Prerequisite: One course in a natural science and/or social science. (PHL 100/150 is recommended.)

FST 300 **Theory, Method and Practice** 1L,2T
We focus on such topics as the valuational and methodological viewpoints related to the identification of, and attempted solution to, practical human problems, and the possibility of developing a unified strategy for their solution. We question whether or not there are unique methods of reasoning and technical vocabularies which affect such a strategy. *W. R. C. Harvey.*
Prerequisite: FST 200 or equivalent

ISLAMIC STUDIES

NOTE: **Introductory Standard Arabic** (ISL 214) is available to students in First Year, and students, particularly those intending to follow the programme in Islamic Studies, are encouraged to take it in First Year.

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

ISL 102 **Islamic Literature in Translation** 2L
This course gives the student a taste of the rich and varied literature of Islam, through the medium of translations from Arabic, Persian, Turkish and Urdu. The object is both to whet his appetite and to help him to select the language or languages which he wishes to study.

ISL 103 **Sufi (Islamic Mystical) Lore** 1L,1T

ISL 105S **Survey of Islamic Art** 2L,1P
The art and archaeology of the Islamic world, from Spain to India, from the Arab

conquests of the 7th century A.D. up to the 18th century. The course includes tutorials and museum study.

ISL 200 **An Historical Introduction to the Islamic World** 2L
A survey course which examines the broad developments in Islamic history which have contributed to the complexities of the present-day Middle East.

ISL 213 **An Introduction to Islamic Civilization** 2L
This course is designed to explain the essential beliefs and practices of Islam, and the development of its intellectual and mystical traditions. Emphasis is given to the Islamic contribution to world civilization in the past, and its continuing impact today.

ISL 214 **Introductory Standard Arabic** 3T,2P
The study of the Arabic language is fundamental to work in Islamic Studies. In this course the student is introduced to the structure of Standard Arabic, neither obviously "classical" nor markedly "modern" in character.

ISL 215 **Introductory Persian** 3T,2P
This course covers the fundamentals of Persian grammar and syntax, and enables the student to read a variety of simple texts in modern Persian. At least one hour a week of language laboratory work is mandatory.
Prerequisite: ISL 214 is strongly recommended as a preparation or complement for students intending to specialize in this area. Those who do not include ISL 214 in their First Year programme will be required to take, at the beginning of the First Term, a short, intensive course on the Arabic script.

ISL 216 **Introductory Turkish** 3T,2P
The basic features of Modern Turkish grammar and syntax are studied in the First Term. By the beginning of the Second Term, the student is already reading Turkish prose; at the end of the course, he should be able to read ordinary modern texts, such as appear in newspapers, with the aid of a dictionary, and to write simple Turkish.
Prerequisite: ISL 214 is strongly recommended as a preparation or complement for students intending to specialize in this area.

ISL 217S **Arabic Literature in North America** 2L

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

ISL 201F **Muhammad and the Rise of the Islamic Empire to 861 A.D.** 2T
The course describes those features of pre-Islamic Arabia inherited by Islam, and examines the life, times and teachings of Muhammad in some detail. It continues with the political, administrative and cultural history of the Orthodox Caliphate, the Umayyads and the early ᶜAbbasids. The early intellectual and religious movements in Islam, and the first Muslim sects, are also discussed.

ISL 202F **Islam v. Christendom: the Crusades** 2T
This course offers a survey of the Crusades, largely from the point of view of Islamic history. Stress is thus laid on the Islamic response to the Crusades on a variety of levels—military, political and cultural.

ISL 203S **The Islamic Empire in Decline (861-1258 A.D.)** 2T
The assassination of al-Mutawakkil in 861 led to the decline of the institution of the Caliphate, and resulted in the rise of the Turks and of autonomous provincial dynasties. Nevertheless this period witnessed the highest development of Islamic culture, and its political, economic and social factors are analysed. The course concludes with the coming of the Mongols in 1258.

ISL 204S **"Universal" Empire: The Mongols** 2T
In the 13th century, nomadic tribes erupted from the Central Asian steppes and established the Mongol "universal" empire from Peking to Poland. This course deals with the western divisions of this empire, which adopted Islam, and describes their relations with the Mamluk empire in Egypt and the Levant.

ISL 210F **Islamic Religious and Social Institutions** 2L
This course examines the basic religious institutions of Islam, and discusses the relation between ritual (*ᶜIbadah*) and customary practice (*ᶜAdah*). In addition, social institutions, such as marriage and divorce, the relation between the individual and the family unit, and aspects of community life will be discussed.
(Students intending to specialize in Islamic Studies are strongly recommended to enroll in ISL 211S along with this course.)

ISL 211S **Islamic Political Institutions** 2L
This course is designed to describe the structure of those Islamic institutions which are less directly related to religion. The rise and evolution of government administration and the system of land tenure are examined in historical perspective.
(Students intending to specialize in Islamic Studies are strongly recommended to enroll in ISL 210F along with this course.)

ISL 212 **Islamic Literature in Its Cultural Setting** 2T
Initially, representative attitudes and forms are identified and contrasted with Western patterns. Type-samples are then related to socio-cultural backgrounds, actual or pretended. Specimen topics: desert poetry (genuine or fabricated?); lyrics (anacreontic, mystical, or pessimistic?); panegyrics (face-value or multi-level?); epics (romantic, mystical, or heroic?); moralisings (serious or conventional?); all-purpose essays; popular tales.

ISL 220 **Intermediate Standard Arabic** 3T,2P
This course concentrates on the reading of simple, connected prose passages that typify normal patterns of Arabic syntax, and that increase the student's working vocabulary in a proper context. More literary and idiomatic passages are introduced gradually enabling the student to develop a feel for the language.
Prerequisite: ISL 214 (or †ISL 100)

ISL 300F **The Ottoman Empire and Modern Turkey** 2T
This course deals with the history of Ottoman expansion from the beginning of Suleyman the Magnificent's reign, the disintegration of the empire and the formation of the Turkish republic. It will provide a solid contribution to understanding the shaping of modern Europe, the Balkans and the Arab world.

ISL 301F **The Mughal Empire, Islam in British India, Pakistan** 2T
After a brief survey of the early history of the Muslim presence in India, the course concentrates in detail on the political, administrative, social and intellectual history of the Mughal Empire. It then deals with the situation and problems of the Muslim community in India under the East India Company and in the British Indian Empire. It concludes with a discussion of the Pakistan movement, and an outline of the political and economic history of Pakistan.

ISL 302S **The Arab World since 1520** 2T
A survey and critical analysis of the political, economic and social aspects of the history of the Arab world, from the beginning of the reign of Suleyman the Magnificent to the present.

ISL 303S **The Safavid Empire and Modern Iran** 2T
This course describes the rise of the Persian national state under the Safavids and discusses the problems associated with its development. After a consideration of the political and economic effects of Anglo-Russian rivalry in Iran in the 19th century, it concludes with an account of modern Iran since the 1906 Constitution.

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

ISL 304S **The History of Islamic North Africa** 2T
This course traces the Muslim conquest of North Africa; outlines the dynastic and political history of Tunisia, Algeria and Morocco from the 8th century to the French occupation; discusses the Arab-Berber political relationship, and the Arabization of the region; examines the history of the Almoravid and Almohad empires; and analyses the particular features of Islam in North Africa.

ISL 310 **Sufism: Mysticism in Islam** 2L
This course deals with the teachings and practices of the mystics in Islam, known as Sufis. The doctrines and disciplines of selected Sufi teachers, and their influence on the development of Islamic civilization, will be examined.

ISL 311 **The Material Culture of Islam** (Not available until 1971-72)
This course involves an investigation (in greater depth than in ISL 105S) of Islamic culture and society, based on the evidence of art and archaeology, from the 7th to the 18th century A.D. It is designed primarily for those who are specializing in either Islamic Studies or Fine Art.
Prerequisite: One course in ISL or FAR

ISL 312S **Islamic Theology and Philosophy** 2L
This course traces the development of medieval Islamic theology (*kalam*) and philosophy (*falsafah*), showing how these represent two divergent views of God and creation. The thought of Avicenna, al-Ghazali and Averroes will be emphasized.

ISL 316F **Ithna ᶜAshari ("Twelver") Shiᶜ ism** (Not available until 1971-72)
After tracing the historical development of Ithna ᶜAshari Shiᶜ ism, from its origin as a political movement in the 7th century A.D., the course concentrates on its later developments, in the Iranian context, as a messianic religious movement, and as an essential ingredient of Persian nationalism.

ISL 321 **Advanced Standard Arabic I** 3T
The study of connected passages of literary Arabic from both classical and modern times is undertaken at this stage, with slightly more emphasis being placed on the modern period. Exercises in grammar and composition are prescribed in coordination with the reading material. Oral comprehension is also stressed.
Prerequisite: ISL 220

ISL 322 **Intermediate Persian** 3T
This course is designed to introduce students to several of the easier genres of Persian prose and poetry, both classical and modern. The short prose selections include belles-lettres, short stories, etc., as well as some historical writing. The poetry selections contain brief samples of lyrics and odes of two major classical poets and a passage from the national epic, together with specimens of the work of contemporary poets.
Prerequisite: ISL 215 (or †ISL 203)

ISL 323 **Intermediate Turkish** 3T
Wide reading of selected modern texts–literary, scholarly and journalistic–covering a variety of subjects, and in a broad range of styles, will consolidate and develop the student's knowledge of Turkish grammar and syntax, and afford him some understanding of the nature of Turkish culture. The course includes an introduction to Ottoman Turkish, the literary language of the Ottoman Empire from the 14th to the early 20th centuries.
Prerequisite: ISL 216 (or †ISL 204)

ISL 325 **Colloquial Arabic I** 2T,1P
This course offers an introduction to the spoken Egyptian dialect of Cairo. The grammar and structure of the language are examined. Emphasis is placed on oral drills.
Prerequisite: ISL 214 (or †ISL 100)

ISL 326 **Colloquial Persian** 2T,1P
This course is designed to enable the student to speak standard Tehran Persian with reasonable fluency.
Prerequisite: ISL 215 (or †ISL 203)

ISL 327 **Colloquial Turkish** 2T,1P
Fluency in the everyday speech of modern Turkey, as spoken in Istanbul, is the aim of this course.
Prerequisite: ISL 216 (or †ISL 204)

COURSES OPEN TO FOURTH-YEAR STUDENTS

ISL 413 **Studies in Islamic Art and Architecture** (Not offered 1970-71) 2T
This is a seminar on selected topics: Timurid Art and Architecture; the Islamic Book; Later Islamic Architecture; Problems in Ceramics; and Iconography.
Prerequisite: ISL 311/105S

ISL 425 **Advanced Standard Arabic II** 3T
This course, which is an extension of the third-year course, is devoted mainly to a thorough study of selected passages from advanced literary Arabic of both the classical

and modern periods. Exercises in composition and oral comprehension are continued on a more advanced level.
Prerequisite: ISL 321 (or †ISL 320)

ISL 426 **Advanced Persian** 3T
This course follows the general pattern of ISL 322, but the passages chosen are longer and more sophisticated and give a solider grasp of the "attitudes" of Persian literature. In particular, while creative prose is not neglected, more emphasis is laid on the characteristic genres of poetry and on historiography.
Prerequisite: ISL 322 (or †ISL 424)

ISL 427 **Advanced Turkish** 3T
While the student will continue to read a good deal of modern Turkish, the main emphasis is on Ottoman Turkish: classical, literary and historical material will be studied in detail.
Prerequisite: ISL 323 (or †ISL 426)

ISL 429 **Colloquial Arabic II** 2T,1P
This course introduces the student to the spoken Palestinian Arabic of Jerusalem. The grammar and structure are explained, and comparisons with other forms of Syrian Arabic are discussed. Emphasis is placed on oral drills.
Prerequisite: ISL 325 (or †ISL 322)

ISL 432F **Seminar on Aspects of the Medieval Islamic World** 2T
(The choice of seminar topic will be made after consultation between staff and students.)
Prerequisite: Any full course in Islamic history or equivalent.

ISL 433S **Seminar on the Impact of the West on a Muslim Society** 2T
(The choice of seminar topic will be made after consultation between staff and students.)
Prerequisite: Any full course in Islamic history or equivalent.

ITALIAN AND HISPANIC STUDIES

ITALIAN

Oral Italian: There will be courses offered at three levels, each open to students in any year, except for those in Italian 100, according to their oral proficiency. These courses will not count in the year's standing, but the level of achievement will be certified by the Department for the student's record.

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

ITA 100 **Italian Language for Beginners** 4L,1P
In this course the student is introduced to the main elements of Italian grammar. The study of modern Italian authors is begun in the second term, with emphasis on language and literary analysis. Oral practice in the classroom and laboratory training are stressed throughout the year.
(May not be combined with ITA 120Y/121Y in any degree programme.)

ITA 120Y **Language Practice** 2T
This course, conducted entirely in Italian, will be for students with Grade XIII Italian or equivalent. It will consist of a review of grammar and the writing of short compositions.
(May not be combined with ITA 100 in any degree programme.)
Prerequisite: XIII ITA or equivalent

ITA 121Y **Italian Twentieth Century Literature** 1L,½T
A course which introduces those with Grade XIII standing or equivalent in Italian to modern Italian literature. Short novels and plays will be analysed for an artistic appreciation and discussed for an understanding of social and intellectual problems of present-day Italy.
(May not be combined with ITA 100 in any degree programme.)
Prerequisite: XIII ITA or equivalent
Co-requisite: ITA 120Y/190Y

ITA 140 **Italy in the Twentieth Century** 1L,1T
The historical, social and cultural background of Italy from unification in the late 19th century to the present day; the disillusionment following the Risorgimento, nationalism, political chaos after World War I, the rise of Fascism, cultural trends: decadentism, futurism, neo-idealism, existentialism, neo-realism. The contemporary cinema.

ITA 141 **Intensive Oral Practice in Italian** 2T
The aim is to enable students to understand spoken Italian and to acquire fluency in speaking. Topics will include material on a variety of aspects of Italian life. After the first few weeks, some time will be devoted to the writing of brief compositions in Italian.
(May not be combined with ITA 120Y/121Y in any degree programme.)
Co-requisite: ITA 100

ITA 190Y **Essays in Italian** Arranged
This course offers those who already have written and oral proficiency in Italian an opportunity for more advanced study of the language. Topics will be chosen from contemporary events of special interest to the students in order to increase fluency in expression.
(May not be combined with ITA 100 in any degree programme.)
Prerequisite: XIII ITA or equivalent

ITA 195 **Reading Course in Italian** 1L
A non-credit course for graduate and undergraduate students in any faculty.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

ITA 220Y **Intermediate Italian** 2T
Discussion and drills on Italian grammar. Exercises in writing brief essays in Italian. The course is conducted primarily in Italian.
(May not be combined with ITA 221Y in any degree programme.)
Prerequisite: ITA 100

ITA 221Y **Expository Writing in Italian** 1T
Discussion of problems connected with vocabulary and syntax. Analysis of examples of modern expository prose. Exercises in essay writing. The course is conducted in Italian.
(May not be combined with ITA 220Y in any degree programme.)
Prerequisite: ITA 120Y/190Y (or †ITA 120)

ITA 222Y **Nineteenth and Twentieth Century Novel** 2L
Manzoni's development of the historical novel as a vehicle for his vision of life. *Verismo* and Verga's new technique to express the social and political problems facing United Italy. The novel after the Second World War. Political consciousness in a fragmented world. The anti-hero and the importance of the myth.
Prerequisite: ITA 100/120Y/190Y (or †ITA 120)
Co-requisite: ITA 220Y/221Y/290Y

ITA 223F **Nineteenth and Twentieth Century Theatre** 2L,1T
The development of realism in the Italian theatre. Depiction of the middle class and its problems. The changing social and economic scene in a united Italy. New techniques in the theatre and their use by Pirandello. Themes of justice and guilt in post-World War II drama.
Prerequisite: ITA 100/120Y/190Y (or †ITA 120)
Co-requisite: ITA 220Y/221Y/290Y

ITA 224S **Nineteenth and Twentieth Century Poetry** 2L,1T
Introduction to the main currents of nineteenth and twentieth century Italian poetry against the social and literary background from the time of the *Resorgimento* to the present day. Reading of representative poems of the nineteenth century from Leopardi and Pascoli, and of the twentieth century from Ungaretti, Montale and Quasimodo.
Prerequisite: ITA 100/120Y/190Y (or †ITA 120)
Co-requisite: ITA 220Y/221Y/290Y

ITA 290Y **Essays on Modern Italian Authors** Arranged
This course is designed for students whose command of Italian exempts them from ITA 221Y. It enables them to deepen their knowledge and understanding of nineteenth and twentieth century Italian literature through supervised individual study.
(May not be combined with ITA 220Y in any degree programme.)
Prerequisite: ITA 120Y/190Y (or †ITA 120)

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

NOTE: Courses in the 300 and 400 series may be taken in Third or Fourth Years, but the choice of option is subject to the approval of the Department.

ITA 320Y **Language Practice** 1½T
Prose passages will be analysed for a better understanding of the structure of the language and will serve also as a source of topics for compositions in Italian. Problems of grammar and syntax will be discussed according as they occur in individual compositions.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)

ITA 321 **Literature of the Middle Ages** 2L,1T
A study of Dante's *Divina Commedia (Inferno* and *Purgatorio)*, Petrarca's *Canzoniere* and Boccaccio's *Decamerone,* against the background of the culture and society of the Middle Ages and the significant literary developments of the time.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)

ITA 322F **Italian Linguistics** 2L,1T
A course designed for students having a knowledge of Italian and/or Italian dialects but no background in linguistics. Concepts of general linguistics. Italy as a linguistic entity. The structure of contemporary Italian, with special regard to its sound system and grammatical categories. The course is conducted in Italian.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)

ITA 323S **Trends in Renaissance Thought** 2L,1T
The emphasis will fall on the Renaissance view of man and of his place in the political and social spheres and also on concepts of history in their relationship with this view. Among prose authors read will be Machiavelli, Guicciardini and Castiglione.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)
Co-requisite: ITA 321

ITA 324F **Baroque Poetry and Drama** 2L,1T
Marinism and anti-marinism in poetry. The mock-heroic poem. Drama. Selected works of Marino, Testi, Chiabrera, Tassoni, Guarini, and Della Valle.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)
Co-requisite: ITA 321

ITA 325F **Eighteenth Century Theatre** 2L,1T
Tradition and innovation in dramatic forms with particular concentration on the music-drama, comedy and tragedy. Selected plays of Metastasio, Goldoni and Alfieri.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)
Co-requisite: ITA 321

ITA 420 **Renaissance Poetry** 2L,1T
Introduction to the poetry of the Renaissance. Influence of Petrarca in the sixteenth century. Tradition and innovation in themes and techniques. Development from Arthurian and Carolingian legends to romances of chivalry. Ariosto's *Orlando Furioso* as a Renaissance work of art; Tasso's *Gerusalemme Liberata* as typical of the Counter-Reformation.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)
Co-requisite: ITA 321 (not applicable to IV Year students who have completed medieval literature under the Old Programme)

ITA 421S **Renaissance Theatre** 2L,1T
Theory and practice of dramatic composition in sixteenth century Italy, with emphasis on the major writers of the *Commedia erudita* and the pastoral tragicomedy.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)
Co-requisite: ITA 321 (not applicable to IV Year students who have completed medieval literature under the Old Programme)

ITA 422S **Concepts of the Baroque** 2L,1T
Seventeenth century philosophical, scientific, historical, and literary prose. Selections from the works of Bruno, Campanella, Galileo, Boccalini, Sarpi, Bartoli, Redi, and Magalotti.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)
Co-requisite: ITA 321 (not applicable to IV Year students who have completed medieval literature under the Old Programme)

ITA 423S **Arcadia and the Enlightenment** 2L,1T
Aspects of eighteenth century thought as reflected in prose and poetry from 1690-1799. Selected works of Muratori, Gravina, Vico, Baretti, Beccaria, Cesarotti and Parini.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)
Co-requisite: ITA 321 (not applicable to IV Year students who have completed medieval literature under the Old Programme)

ITA 424F **Dante's Paradiso** 2L,1T
The nodal images and key allegories of "Paradiso terrestre." The fusion of Christian symbolism and Roman mythology in the third *cantica* of the *Commedia.* Autobiography, history, and criticism of contemporary institutions and public figures in *Paradiso.* Realism and fiction in Dante's cosmology of the heavens.
Prerequisite: ITA 220Y/221Y/290Y/321 (or †ITA 223/300)

ITA 425S **Thirteenth Century Poetry** 2L,1T
The *contrasti* and debates in the literary languages of the North and the South. The theory of *fino amore* and *folle amore.* The changing aspects of the love lyric in the schools of Palermo, Bologna and Florence, Umbria and the Centre. The allegorical poetry of Brunetto Latini, the *Fiore* and the *Intelligenza.*
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)
Co-requisite: ITA 321 (not applicable to IV Year students who have completed medieval literature under the Old Programme)

ITA 426Y **Nineteenth and Twentieth Century Novel** 1L,½T
Manzoni's investigation of man in society and history. Verga's pessimistic view of the individual in society; his new technique. Fogazzaro's synthesis of political and spiritual values. Revival of the philosophical novel and a concern for the human condition. New social, economic and political patterns. Technical changes influenced by American fiction.
Prerequisite: (Offered 1970-71 only, to students who have taken 3 years of Italian.)

ITA 427S **Nineteenth and Twentieth Century Poetry** 2L,1T
Introduction to the main currents of nineteenth and twentieth century Italian poetry against the social and literary background from the time of the *Risorgimento* to the present day. Reading of representative poems of the nineteenth century from Leopardi, Pascoli and D'Annunzio, and of the twentieth century from Ungaretti, Montale and Quasimodo.
Prerequisite: (Offered 1970-71 only, to students who have taken 3 years of Italian.)

ITA 428F **Nineteenth and Twentieth Century Theatre** 2L,1T
Romantic and poetical tragedy, its technical innovations and patriotic themes. Late

development of realism: problems of the family and the new industrialism. The Futurist revolution: changes in techniques and in staging. The metaphysical drama of Pirandello. Post-World War II dramatists: the theme of justice and religion. The chronicle play.
Prerequisite: (Offered 1970-71 only, to students who have taken 3 years of Italian.)

ITA 429F **Italian Stylistics** 2L,1T
A course designed to help students in developing an acceptable prose style. Discussion of matters pertaining to syntactic structure, lexical choice, levels of style. Reading of selected prose passages and written exercises. The course is conducted in Italian.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222, 390)

ITA 430S **History of the Italian Language** 2L,1T
The linguistic transition from Latin to Italian. Historical phonology and morphology, and problems relating to syntax and lexicon. Reading and linguistic analysis of early Italian texts. The course is conducted in Italian.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)

ITA 431S **Modern Italian Literary Criticism** 2L,1T
Criticism from Romanticism to the present day. De Sanctis, the historical school of the late nineteenth century, the idealistic aesthetics of Croce. Post-Crocean historical, Marxist and stylistic criticism. Emphasis is placed on class discussion and the development of the students' own viewpoints.
Prerequisite: ITA 220Y/221Y/290Y (or †ITA 222)
Co-requisite: ITA 321 (not applicable to IV Year students who have completed medieval literature under the Old Programme)

PORTUGUESE

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

PRT 195 **Reading Course in Portuguese** 1L
A non-credit course for graduate and undergraduate students in any faculty.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

PRT 200 **Introductory Course in Portuguese** 3L,2P
Intensive audio-lingual drill. Special emphasis on comprehension and oral practice. Instruction both in the classroom and the language laboratory. Reading of selected modern works.

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

PRT 420 **Introduction to Brazilian Literature** 2L,2P
Reading and discussion of important works from nineteenth and twentieth century Brazilian literature. Review of grammar. Language practice.
Prerequisite: PRT 200 (or †PRT 320)

SPANISH

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

SPA 100 **Spanish Language for Beginners** 3L,2P
A basic introductory course which provides instruction in the spoken and written language. In addition to the three hours of classes in small groups, two hours of supervised instruction in the language laboratory afford the student an opportunity for intensive oral practice. The second term includes a study of leading contemporary authors of the Spanish-speaking world.
(May not be combined with SPA 120 in any degree programme.)

SPA 120 **Modern Spanish Literature. Language Practice** 2L,1T,1P
A course for those with Grade XIII standing or equivalent in the subject. Some modern Spanish prose and poetic works are studied for their literary value and in relation to social and intellectual problems. Intensive written and oral practice is stressed both in the two hours of literature and in the language hours.
(May not be combined with SPA 100 in any degree programme.)
Prerequisite: XIII SPA

SPA 125 **Introductory Spanish Linguistics. Language Problems** 2L
Introduction and theoretical background to the study of Hispanic linguistics. Brief history of the Spanish language, its sound system, lexical components, grammatical structure, comparison of its structure with that of Latin, other Romance languages and English. Second term: problems of learning Spanish and study of its basic vocabulary.
Co-requisite: SPA 100/120

SPA 150 **Survey of Spanish Culture** 1L,1T
An introduction to the social, political, intellectual and artistic history of Peninsular Spain from the earliest to modern times, with emphasis placed on the outstanding periods of the culture of the Spanish-speaking people. Lectures and prescribed reading will be in English.

SPA 190Y **The Modern Hispanic Novel in Translation** 1L,½T
The modern novel in Spain and Latin America represents a search for a new image of man and an attempt to restate the fundamental problems of existence. A critical analysis of the novel will be stressed.

SPA 195 **Reading Course in Spanish** 1L
A non-credit course for graduate and undergraduate students in any faculty.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

SPA 220Y **Composition and Oral Practice I** 1L,1P
This course is designed to give the student intensive practice in the language, both written and oral, to enable him to gain ease and fluency in both skills. The division into small groups will allow the instructor to give individual attention.
Prerequisite: SPA 100

SPA 221Y **Composition and Oral Practice II** 1L,1T
This course will give the intermediate student intensive practice in written and oral Spanish. Small groups in composition and oral classes will ensure individual attention. (May not be combined with SPA 220Y in any degree programme.)
Prerequisite: SPA 120

SPA 225Y **Spanish Phonetics and Phonemics** 1L,½T
After an introduction to general phonetic theory, a detailed study of the sounds of contemporary Spanish will lead to a discussion of the way these sounds function in the phonemic system of the language.
Prerequisite: SPA 100/120
Co-requisite: SPA 220Y/221Y

SPA 236S **Modern Spanish Poetry** 2L,1T
A study of some major poets of the nineteenth and twentieth centuries showing successive changes in poetic style and in the treatment of reality from Romanticism to Surrealism. The lecture period in English/Spanish will be supplemented by seminar discussion of poems in Spanish for additional oral practice.
Prerequisite: SPA 100/120
Co-requisite: SPA 220Y/221Y

SPA 246F **Modern Spanish Drama from 1830 to 1930** 2L,1T
The Romantic revolt against Neo-Classicism; the Realistic theatre's presentation of moral and social questions; later trends toward discussion of philosophical and psychological problems.
Prerequisite: SPA 100/120
Co-requisite: SPA 220Y/221Y

SPA 256Y **Spanish Novel from 1874 to 1936** 1L,½T
The modern Spanish Novel from Realism to Existentialism is examined as a varied and challenging statement of man's quest for self-discovery. A critical analysis of the novel will be stressed in the lectures and discussed in the tutorial groups.
Prerequisite: SPA 100/120
Co-requisite: SPA 220Y/221Y

SPA 280Y **Spanish American Civilization** 1L,1T
Significant cultural manifestations in Latin America, from the pre-Columbian civilizations to the present, will be examined using background texts and specific literary works. A lecture-discussion period, conducted in Spanish, will be supplemented by a seminar hour designed to improve oral proficiency in Spanish.
Prerequisite: SPA 100/120
Co-requisite: SPA 220Y/221Y

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

Note: All courses in the 300 and 400 series (except SPA 420Y) may be taken in Third or Fourth Year, but the choice of option is subject to the approval of the Department.

SPA 320Y **Composition and Oral Practice III** 1L,1T
This course provides, in small groups, intensive practice in written and oral Spanish.
Prerequisite: SPA 220Y/221Y

SPA 325Y **Medieval Spanish Language** 1L,½T
The study of the phonetic, morphological and syntactic characteristics of medieval Spanish. The first weeks will be devoted to the study of the development of Spanish from Vulgar Latin. Selected passages from old texts will be read for an analysis of their linguistic peculiarities.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 333F **Golden Age Verse** 2L,1T
A study of major Renaissance and Baroque poets representing the main trends in Spanish poetry and poetics of this period. The lectures will be in Spanish, supplemented by seminar discussion (oral and written) of selected poems.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 343Y **Golden Age Drama** 1L,½T
A study of the development of Spanish drama in the sixteenth and seventeenth centuries, with the careful reading of ten representative plays. Stress is laid on the stage presentations both in the popular theatres and in the court theatres. One essay, on an assigned topic, is required.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 353Y **Golden Age Prose** 1L,½T
A study is made of the different varieties of prose fiction (e.g., chivralresque, pastoral, picaresque) cultivated in the Golden Age, with special reference to representative examples. Major attention is paid to *Don Quijote.*
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 366F **Spanish American Modernista Verse** 2L,1T
A study of the *modernista* current as reflected in the works of its most significant exponents.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320/420Y

SPA 382S **Twentieth Century Spanish American Novel** 2L,1T
Representative works, including the *novela gauchesca,* the *novela indianista,* and the *novela de la revolucion mexicana.*
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 386Y **Spanish American Essay** 1L,½T
The cultural essence of Spanish America as defined by its outstanding essayists, both

stylists and interpreters of the Spanish American past as a "living force in the building of the future."
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 425Y **History of the Spanish Language** 1L,½T
The evolution of Spanish from Pre-Romanic times to the present. The main aspects to be treated are: the dialectalization of Hispano-Latin through inherent linguistic changes and influences from other languages, and the development of Castilian from a dialect in the medieval period into one of the most important languages of the world in modern times.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 430S **Medieval Spanish Verse** 2L,1T
The development of epic poetry from the *Cid* to the *romances.* The mozarabic *jarchyas* and the origins of the lyric poetry of love. The *mester de clerecia,* the "bizantine" matter, and the *Libro de Buen Amor.* The *literatura de protesta* and other committed poetry. Fifteenth century allegorical lyric and epic.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 436Y **Twentieth Century Spanish Poetry** 1L,½T
A study of some major poets and poetics of the twentieth century. The lectures will be in Spanish, supplemented by oral and written analysis of selected poems in the tutorial groups.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 446S **Spanish Drama since 1930** 2L,1T
Naturalism and sentiment in the middle-class comedy of manners; the influence of "Modernism"; the experimental techniques in the *teatro de vanguardia* and the influence of the expressionistic and grotesque theatres; the escape from reality and the theatre of the absurd; recent trends in themes of social protest.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 450F **Medieval Spanish Literary Prose** 2L,1T
The novelistic and epic elements of the early chronicles. Spain as point of departure for the development of the oriental frame story and *literatura de ejemplos.* The early *novelas caballerescas.* The origins of the allegorical and sentimental novel. The medieval aspects of the first *Celestina.*
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 456Y **Spanish Novel from 1936 to the Present** 1L,½T
The Spanish novel from the Civil War to the present illustrates man's search for identity in an alien and chaotic world. Methods of analysis developed in Spanish 256Y will be used throughout. Tutorials by appointment.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 466S **Spanish American Verse since Modernismo** 2L,1T
A study of the different currents in twentieth century Spanish American Verse with specific reference to their outstanding exponents.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 470Y **Modern Spanish American Drama** 1L,½T
A study of the dramatic genre as reflected in some of its significant exponents.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y.

SPA 480F **Spanish American Literature from 1500 to 1880** 2L,1T
Literary currents of the colonial period and the nineteenth century prior to *modernismo:* the growth of cultural "self-expression."
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

SPA 484Y **Modern Spanish American Cuento** 1L,½T
Representative works from the short story genre in the nineteenth and twentieth centuries, including Borges, Cortazar, Rulfo and others.
Prerequisite: SPA 220Y/221Y
Co-requisite: SPA 320Y/420Y

COURSES OPEN TO FOURTH-YEAR STUDENTS

SPA 420Y **Composition and Oral Practice IV** 1L,1T
A course designed to provide fluency in the language, both at the literary and colloquial level, with intensive written and oral practice in small groups.
Prerequisite: SPA 320Y (or †SPA 390)

JAPANESE

See "East Asian Studies"

LATIN

See "Classical Studies"

LINGUISTICS

COURSES OPEN TO FIRST- AND HIGHER- YEAR STUDENTS

JAL 100 **Introduction to General Linguistics** 2L,IT
References: An Introduction to Descriptive Linguistics and Workbook. Lectures on fundamental principles with illustrations from English and from a broad spectrum of other languages. Tutorials for practice in production and recognition of speech sounds, and elementary analytic techniques.

COURSES OPEN TO SECOND- AND HIGHER- YEAR STUDENTS

LIN 201 **Language Learning** IL,2P
An investigation of the learning of first and second languages in monolingual and polylingual societies. Illustrated by 16 to 20 hours of the learning of some exotic spoken language such as Chinese or Japanese.
(May not be combined with †LIN 221 in any degree programme.)

LIN 220 **Bases of Linguistic Theory** (Not offered 1970-71.)
Exploration of some current tasks in linguistics and the theoretical basing of practical work. The linguist's approaches are contrasted with those of philosophers, language teachers and others.
Prerequisite: JAL 100 (or †LIN 100) or departmental consent

LIN 228F **Phonetics** IL,2P
The sounds most commonly used in languages, with practice in their recognition and production guided by articulatory description.
Prerequisite: JAL 100 (or †LIN 100) or departmental consent

LIN 229S **Sound Patterns in Language** 2L
The nature and organization of phonemic systems, with survey of their range of varieties and practical work in phonological analysis.
Prerequisite: LIN 228F or departmental consent

LIN 230 **Grammatical Patterns in Language** 2L
The nature and organization of morphological and syntactic systems, the relation of these to semantic systems and the linguistic organization of discourse, together with practical work in grammatical analysis.
Prerequisite: JAL 100 (or †LIN 100) or departmental consent

ANT 240 **Languages of the World** 3L
A survey of the languages of the world, and of the groups and subgroups into which they are classified. A discussion of linguistic structures and of the methods of language classification. This course covers the domains of linguistic geography and language typology, and provides a background in linguistics for students of anthropology.

COURSES OPEN TO THIRD- AND HIGHER- YEAR STUDENTS

JAL 300 **Language and Society** 2L
The use of language from social perspectives: Dialects and standard languages; speech styles; argots, substandard and other varieties; language planning and schooling; the politics of language.
(May not be combined with †LIN 302 in any degree programme.)
Prerequisite: JAL 100/LIN 201 (or †LIN 100/221)

LIN 326 **Linguistic Approach to (e.g. Swahili)** 2T,2P
Systematic introduction to a spoken language, making use of competences gained in JAL 100 and showing their relevance to practical language work, and showing the nec-

essity of having some theoretical orientation for practical language teaching. (Not offered 1970-71.)
Prerequisite: JAL 100 (or †LIN 100)

LIN 333 **Structure of English** 2L
The syntactic and morphological systems of English and an examination of some of the commonly used presentations of English grammar.
Prerequisite: JAL 100 (or †LIN 100) or permission of the Department

LIN 348 **Language History** 2L
The processes of linguistic change through time: Survey of the internal history of the Indo-European language family and discussion of selected topics drawn from this and other families.
Prerequisite: JAL 100 (or †LIN 100) or permission of the Department

LIN 349 **History of Linguistics** 2L
The history of linguistic speculation and investigation and its relation to other intellectual movements. (Not offered 1970-71.)
Prerequisite: JAL 100 (or †LIN 100) or permission of the Department

COURSES OPEN TO FOURTH-YEAR STUDENTS

LIN 450 **Linguistics & Literature** 2L
Exploration of the way in which literature operates within the constraints of language and exploits language resources. (Not offered 1970-71.)
Prerequisite: JAL 100 (or †LIN 100) and permission of the Department

LIN 491 **Advanced Topics** 2L
Enrolment in a graduate course of the 1000 series.
Prerequisite: Permission of the Department

LITERATURE

COURSES OPEN TO SECOND- AND HIGHER- YEAR STUDENTS

LIT 310 **Modern Literature** 3T
A study of selected literary texts from European and American Literatures. Texts not written in English will be read in translation.

MATHEMATICS

All courses offered by the Department are open to all students having appropriate prerequisites and co-requisites.

A student who wishes to take a course in Mathematics for which he lacks the prescribed prerequisite may be permitted to do so if, in the opinion of the Department, he demonstrates adequate preparation for the course. He must apply to the Undergraduate Secretary of the Department for

such waiver of prerequisite and is strongly advised to do so, preferably in person, as early as possible, and at least two months before the beginning of term. At that time suitable study material will be suggested. An examination may be required before the beginning of term.

Note: NO TWO of MAT 110, 130, 134, 135, 139, 150 may be combined in any degree programme. Other undesirable combinations are noted below. In addition to the individual listings, no TWO of the following can be combined in any degree programme: GGR 270, GLG 221Y, STA 232, STA 242, STA 252, ECO 220, POL 206, (PSY 200F + PSY 201S), SOC 201.

For the convenience of students entering First Year, the following list of courses have been extracted from the complete list that follows; these courses either have no stated prerequisites or have prerequisites that are normally met by students entering the University from the secondary schools. (Some are Second Term half-courses with a First Term half-course as prerequisite.) For complete description, see under the appropriate entry in the main list.

COMPUTER SCIENCE

CSC 108F **Computer Programming** 2L,2T

CSC 108Y **Computer Programming** 1L,1T

CSC 118S **The Computer and Society** 1L,2T
Prerequisite: CSC 108F/108Y/148F/148Y (or †CSC 238F)

CSC 148F **Introduction to Computing** 2L,2T
Prerequisite: XIII MAT A
Co-requisite: MAT 134/135/139/150

CSC 148Y **Introduction to Computing** 1L,1T
Prerequisite: XIII MAT A
Co-requisite: MAT 134/135/139/150

CSC 158S **Computers and Society** 1L,2T
Prerequisite: CSC 148F/148Y (or †CSC 238F)

CSC 218S **Computer Graphics** 2L,1T
Prerequisite: CSC 108F/108Y/148F/148Y (or †CSC 238F)

CSC 248S **Programming Languages and Applications** 2L,1T
Prerequisite: CSC 148F/148Y (or †CSC 238F)

MATHEMATICS

MAT 100 **Introduction to Mathematics** 2L,2T

MAT 110 **Calculus A** 2L,2T

MAT 120 **General Mathematics** 2L,2T
Prerequisite: XIII MAT A

MAT 130 **Calculus** 2L,2T
Prerequisite: XIII MAT A

MAT 134 **Calculus for Social Scientists** 2L,2T
Prerequisite: XIII MAT A

MAT 135 **Calculus for Scientists** 2L,2T
Prerequisite: XIII MAT A

MAT 139 **Calculus with Linear Algebra** 2L,2T
Prerequisite: XIII MAT A and B. (Students without XIII MAT B may enrol if they take an additional 2hr/wk tutorial in the First Term.)

MAT 140 **Linear Algebra and Geometry** 2L,1T
Prerequisite: XIII MAT A and B

MAT 150 **Analysis I** 2L,2T
Prerequisite: XIII MAT A and B
Co-requisite: MAT 140 (PHY 120 is recommended.)

MAT 225 **Linear Algebra** 2L,2T
Prerequisite: XIII MAT A or MAT 110

MAT 245S **Geometry I** 2L,1T
Prerequisite or Co-requisite: MAT 140

ACTUARIAL SCIENCE

ACT 223F **Mathematics of Investment and Credit** 2L,1T
Interest, discount, and present values, as applied to determine prices and values of mortgages, bonds, shares of stock; loan repayment schedules and consumer finance payments in general; yield rates on investments given the costs of the investments and the cash returns; effective costs of credit arrangements.
Prerequisite: A first-year calculus course

ACT 233S **Introductory Life Contingencies** 2L,1T
Probability theory applied to problems involving life and death of one or more lives; costs of life assurances, life annuities, pensions; determination of balance sheet reserves; standard international notation.
Prerequisite: ACT 223F
Co-requisite: STA 232/242/252

ACT 323 **Finite Calculus** 2L,1T
Interpolation, summation, integration, graduation, difference equations.
Prerequisite: Any second year calculus course

ACT 333 **Theory of Life Contingencies A** 2L,1T
An advanced course covering: laws of mortality; population theory (stationary, varying); special annuity and insurance benefits and combinations thereof; fractional pre-

premiums; reserve liabilities in theory and practice; effects of changes in interest and mortality assumptions; expenses; gross premiums, asset shares, modified reserves, cash values; non-forfeiture options; distribution of surplus.
Prerequisite: Recommended preparation: ACT 233S

ACT 423 **The Theory of Life Contingencies B** 2L,1T
Probabilities, present values, reserves, when two or more lives are involved; value of payments conditional on the lives dying in a certain order. Analysis of tables that show survivorship where there is more than one mode of exit from the cohort; applications to pension and disability plans.
Co-requisite: ACT 333

ACT 433 **Selected Actuarial Topics** 2L,1T
For example: preparation and analysis of raw data; applications of operations research; risk theory; financing of pensions; social insurance; demography.
Prerequisite: Recommended preparation: ACT 333

APPLIED MATHEMATICS

APM 236S **Numerical Methods** 2L,1T
Solution of non-linear equations, approximation, quadrature, solution of systems of linear equations, eigenvalues and eigenvectors, differential equations. Exercises requiring use of a computer will be assigned.
(May not be combined with APM 361F (or †APM 231/361) in any degree programme.)
Prerequisite: CSC 108F/108Y/148F/148Y and MAT 134/135/139/150
Note: CSC 108F/108Y and MAT 110/130 accepted as prerequisite with MAT 225 as co-requisite.

APM 246S **Mechanics** 2L,1T
Lagrange equations, harmonic oscillator, Kepler problem, small vibrations.
(May not be combined with APM 251 in any degree programme.)
Prerequisite: PHY 120 and MAT 244F

APM 251 **An Introduction to Applied Mathematics** 2L,1T
Differential equations, existence and uniqueness of solutions, systems of linear equations, classical mechanics, equations of Lagrange and Hamilton, harmonic oscillator and Kepler problem, boundary value problems. Fourier series and applications.
(May not be combined with APM 246S/APM 331F/MAT 244F in any degree programme.)
Co-requisite: MAT 250

APM 331F **Applied Differential Equations** 2L,1T
A study of ordinary and partial differential equations in a physical context.
(May not be combined with MAT 244F or APM 251 in any degree programme.)
Prerequisite: MAT 230/234/235/239/250

APM 336S **Mathematics in the Social Sciences** 2L,1T
Illustrative mathematical models in the social sciences, involving concepts of order,

calculus, matrix algebra, probability and optimization.
Reference: Kemeny & Snell, *Mathematical Models in the Social Sciences.*
Prerequisite: Any two MAT courses

APM 351 **Differential Equations of Mathematical Physics** 2L,1T
Distributions, elliptic, parabolic and hyperbolic partial differential equations in their physical contexts, transforms and conformal mapping, Green's functions, self-adjoint operators and eigenfunction expansions, variational methods and Hamilton–Jacobi theory.
(May not be combined with APM 441 in any degree programme.)
Prerequisite: APM 251
Co-requisite: MAT 350 and 330

APM 361F **Numerical Analysis** 2L,1T
Analysis of methods for finding the roots of polynomials and non-linear equations, solving systems of linear algebraic equations and performing matrix calculations. Approximation theory. Interpolation and quadrature. Numerical solution of ordinary differential equations, including convergence theorems and stability.
(May not be combined with APM 236S (or †APM 231) in any degree programme.)
Prerequisite: CSC 148F/148Y (or †CSC 238F) and MAT 239/250

APM 421F **Foundations of Quantum Mechanics** 2L,1T
The general formulation of non-relativistic quantum mechanics based on the theory of linear operators in a Hilbert space. Applications to wave mechanics, scattering theory and symmetry theory.
Prerequisite: MAT 350

APM 426S **General Relativity** 2L,1T
Space–time as a differentiable manifold, Minkowski space, space–time of gravitation, field equations, special solutions, Cauchy problem, equations of motion.
Prerequisite: MAT 369S (or †MAT 360)

APM 436S **Fluid Mechanics** 2L,1T
A study of flows in a Newtonian fluid, Stokes flows, boundary layers, shock waves, singular perturbations.
Co-requisite: APM 351/441

APM 441 **Differential Equations of Mathematical Physics** 2L,1T
Equations of second order, Green's functions, distributions, Hilbert space, elements of functional analysis, eigenvalues and eigenfunctions with applications to wave propagation, heat flow and boundary value problems.
(May not be combined with APM 351 in any degree programme.)
Prerequisite: MAT 319S/330/339 (or †MAT 355)

APM 451F **Linear Programming and the Theory of Games** 2L,1T
An advanced treatment of the theory, solution, and application of linear programming, two–person game theory, network flow theory, the assignment problem, linear economic models and related topics in linear mathematics.
Prerequisite: MAT 339/340/345/350

APM 456S **Optimization and Control Theory** 2L,1T
Theory of extrema for constrained problems; topics in non-linear programming, the calculus of variations, optimal control theory and applications.
Prerequisite: MAT 339/350 or APM 451F

APM 461F **The Numerical Solution of Initial Value Problems** 2L,1T
Solution of initial value problems for hyperbolic and parabolic partial differential equations. Difference schemes for non-linear problems. Discontinuous solutions. Stability, consistency.
Prerequisite: MAT 319S/330/339/350 (or †MAT 355)

APM 466S **The Numerical Solution of Boundary Value Problems** 2L,1T
Iterative solutions of large systems of linear equations. Difference approximations for elliptic boundary value problems; consistency, convergence. Mixed initial–boundary value problems of linear parabolic type; stability.
Prerequisite: MAT 319S/330/339/350 (or †MAT 355)

APM 491F **Advanced Topics in Applied Mathematics** 2L,1T
Graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

APM 496S **Advanced Topics in Applied Mathematics** 2L,1T
Graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

COMPUTER SCIENCE

CSC 108F **Computer Programming** 2L,2T
Algorithms and flow charts. An introduction to stored–program computers and programming in a higher level language, such as Fortran or PL/1. Elementary applications. (May not be combined with CSC 108Y/148F/148Y (or †CSC 238F) in any degree programme.)

CSC 108Y **Computer Programming** 1L,1T
Algorithms and flow charts. An introduction to stored–program computers and programming in a higher level language, such as Fortran or PL/1. Elementary applications. (May not be combined with CSC 108F/148F/148Y (or †CSC 238F) in any degree programme.)

CSC 118S **The Computer and Society** 1L,2T
The impact of automation on society, with special emphasis on the role of the computer, what the computer can do, its business and scientific applications and its effect on society in general. Special attention will be paid to the problems and dangers encountered by society in the computer age.
(May not be combined with CSC 158S in any degree programme.)
Prerequisite: CSC 108F/108Y/148F/148Y (or †CSC 238F)

CSC 148F **Introduction to Computing** 2L,2T

Algorithms, flow charts, stored–program computers and algebraic programming languages. Programming in a higher level language such as Fortran or PL/1, and applications to numerical calculations, simulations, statistics, data processing, and non-numerical problems.

(May not be combined with CSC 108F/108Y/148Y (or †CSC 238F) in any degree programme.)

Prerequisite: XIII MAT A

Co-requisite: MAT 134/135/139/150

CSC 148Y **Introduction to Computing** 1L,1T

Algorithms, flow charts, stored–program computers and algebraic programming languages. Programming in a higher level language such as Fortran or PL/1, and applications to numerical calculations, simulations, statistics, data processing, and non-numerical problems.

(May not be combined with CSC 108F/108Y/148F (or †CSC 148Y/238F) in any degree programme.)

Prerequisite: XIII MAT A

Co-requisite: MAT 134/135/139/150

CSC 158S **Computers and Society** 1L,2T

A study of computer applications and their implications for society. Simulation and the validity of computer models in social and economic contexts; data banks and privacy; legal problems associated with the management of large files; the potential and limitations of artificial intelligence.

(May not be combined with CSC 118S in any degree programme.)

Prerequisite: CSC 148F/148Y (or †CSC 238F)

CSC 218S **Computer Graphics** 2L,1T

An introduction to graphic display of information and the processing of visual data by computer. Applications in data display, graphic simulation, cartography, digital picture processing, interactive design and computer art will be used to illustrate the various available techniques. Students will gain some programming experience through projects.

Prerequisite: CSC 108F/108Y/148F/148Y (or †CSC 238F)

CSC 228F **Programming Techniques for Data Processing** 2L,1T

Cobol, modular programming, decision tables, if–applicable programming, tabling, table oriented logic, debugging, sorting, hardware and software evaluation.

Prerequisite: CSC 108F/108Y/148F/148Y (or †CSC 238F) and one MAT course other than MAT 100

CSC 248S **Programming Languages and Applications** 2L,1T

The syntax and semantics of various programming languages, including both algebraic and symbol manipulation languages. Data structures. Numerical and non-numerical applications.

Prerequisite: CSC 148F/148Y (or †CSC 238F)

CSC 258F **Computer Organization and Assembly–Language Programming** 2L,1T
Computer structure, machine language, instruction execution, addressing techniques, and digital representation of data. Computer system organization, hierarchy of memory storage devices, logic design, microprogramming and emulators. Symbolic and assembly systems, macro definition and generation, program segmentation and linkage. Some case studies of actual machines to illustrate various architectures.
Prerequisite: CSC 148F/148Y (or †CSC 238F)

CSC 348F **Switching Theory** 2L,1T
Boolean algebra, Boolean functions. Karnaugh and Quine–McCluskey minimization, sequential machines, state minimization. State assignments, relationship of sequential machines to switching components.
Prerequisite: 1 full university mathematics course

CSC 368S **Language Processors** 2L,1T
Formal description and classification of programming languages. Specification of syntax. The parsing problem. Top–down and bottom–up parsing. Precedence methods. Attaching semantics to syntax. Translator writing systems.
Prerequisite: CSC 258F and CSC 248S (or †CSC 358S)

CSC 438F **Computability Theory** 2L,1T
Propositional calculus, predicate calculus, formal systems, primitive–recursive functions, Gödel numbering and theorems, recursive functions, recursive sets. Turing machines, unsolvable problems, universal Turing machines, hierarchies of functions, computational complexity.
Prerequisite: MAT 340/345

CSC 448S **Automata Theory** 2L,1T
Finite automata, sequential machines, regular sets, regular expressions, generative grammars, context–free grammars and push–down automata, context–sensitive grammars, and linear–bounded automata, operations on languages, bounds for recognition, decision problems, unified theory of automata.
Prerequisite: CSC 368S and CSC 438F

CSC 458F **Information Structures** 2L,1T
Linear lists, stacks, queues and deques. Sequential allocation, linked allocation, circular lists, doubly linked lists, arrays and orthogonal lists. Binary trees, representation of trees, basic mathematical properties of trees. Multilinked structures. Dynamic storage allocation.
Prerequisite: CSC 368S

CSC 468S **Operating Systems** 2L,1T
Process control, multiprogramming, generalized addressing, multiprocessing parallel computations. Protection schemes. Resource allocation, static and dynamic scheduling. Dynamic storage allocation, paging. Memory management, page traffic. Reliability: debugging tools, error tolerance.
Prerequisite: CSC 458F

CSC 488F **Advanced Topics in Computer Science** Arranged
CSC 488F is a graduate level course.

Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

CSC 498S **Advanced Topics in Computer Science** Arranged
CSC 498S is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

MATHEMATICS

MAT 100 **Introduction to Mathematics** 2L,2T
The nature and role of mathematics, illustrated primarily by the development of numerical and geometric ideas. Lectures, films, study of mathematical literature, and the writing of an essay. Tutorials will provide opportunity for doing mathematics as well as talking about it.

MAT 110 **Calculus A** 2L,2T
The derivative and integral with applications. (This course is MAT 130 adapted for students with no Grade XIII Mathematics.)

MAT 120 **General Mathematics** 2L,2T
A selection of topics in algebra, probability theory, statistics and analysis. (Designed as a terminal course.)
Prerequisite: XIII MAT A

MAT 130 **Calculus** 2L,2T
The derivative and integral, with applications. This is a course for those who need calculus to accompany another field of study but do not have a special interest in it; however, it is also suitable as a basis for further work.
(See also MAT 110.)
Prerequisite: XIII MAT A

MAT 134 **Calculus for Social Scientists** 2L,2T
The derivative, extremal problems in one variable, other applications. The Riemann integral, antiderivatives and the Fundamental Theorem. Systematic techniques of integration and applications. Vector spaces, linear transformations, matrices, inverses, linear equations. Functions in more than one variable, and partial differentiation. (Examples will emphasize applications to the Social Sciences.)
Prerequisite: XIII MAT A

MAT 135 **Calculus for Scientists** 2L,2T
The derivative, extremal problems in one variable, other applications. The Riemann integral, antiderivatives and the Fundamental Theorem. Systematic techniques of integration and applications. Vector spaces, linear transformations, matrices, inverses, linear equations. Functions in more than one variable, and partial differentiation. (Examples will emphasize scientific applications.)
Prerequisite: XIII MAT A

MAT 139 **Calculus with Linear Algebra** 2L,2T
Limits and continuity. Differentiation; integration; the fundamental theorem; eval-

uation of definite integrals. Mean value theorem; extremum problems. Taylor's theorem. Introduction to linear algebra. Vector spaces; linear independence; basis. Linear transformations; matrices; determinants; rank and null space. Systems of linear equations. Introduction to differential equations. Partial derivatives, and applications.
Prerequisite: XIII MAT A and B. (Students without XIII MAT B may enrol if they take an additional 2 hr/wk tutorial in the Fall Term.)

MAT 140 **Linear Algebra and Geometry** 2L,1T
Groups – Basic definitions, Lagrange's theorem, factor groups, isomorphism theorem, existence of A_n. Geometry – Equations of lines and planes, quadric surfaces. Linear Algebra – Basic definitions, theorems about dimension and basis, abstract linear transformations, matrices, change of basis, dual space, determinants, linear equations, eigenvalues, eigenvectors, inner product spaces, orthonormal basis, reduction of symmetric matrix.
(May not be combined with MAT 225 in any degree programme.)
Prerequisite: XIII MAT A and B

MAT 150 **Analysis I** 2L,2T
Basic concepts of calculus: Axioms for the real numbers. Limits and continuity; intermediate value theorem. The derivative; the integral; the fundamental theorem. Mean value and extreme value theorems. Elementary transcendental functions; Taylor's theorem. Introduction to differential equations. Calculus of curves in E_3. Convergence. Power series.
Prerequisite: XIII MAT A and B
Co-requisite: MAT 140 (PHY 120 is recommended.)

MAT 220 **Classical and Modern Analysis** 2L,1T
Continuation of MAT 100. Newton–Leibniz calculus, 19th century rigour and extensions, 20th century generalizations.
Prerequisite: Any First–Year MAT course.

MAT 224S **Set Theory and Logic** 2L,1T
An introduction to classical set theory and logic. Topics will include cardinal and ordinal arithmetic, axiom of choice, Boolean algebra, and informal first–order logic.
Prerequisite: Any two full MAT courses.

MAT 225 **Linear Algebra** 2L,2T
Vector spaces, linear transformations, matrices and determinants, quadratic forms and their geometrical interpretation, introduction to groups, rings and fields.
(May not be combined with MAT 140 in any degree programme.)
Prerequisite: XIII MAT A or MAT 110

MAT 230 **Advanced Calculus** 2L,1T
A continuation of MAT 130. The definite integral, expansion in series, partial differentiation, multiple integration, differential equations.
(May not be combined with MAT 234/235/239/250 in any degree programme.)
Prerequisite: MAT 110/130/134/135/139/150

MAT 234 **Advanced Calculus for Social Scientists** 2L,1T
Introduction to sequences and series, power series, Taylor's series in one and many

variables. Extremal problems in many variables with and without constraints, Lagrange multipliers, reduction of quadratic forms. Introduction to difference and differential equations, emphasizing linear equations with constant coefficients.
(May not be combined with MAT 230/235/239/250 in any degree programme.)
Prerequisite: MAT 134/135/139/150

MAT 235 **Advanced Calculus for Scientists** 2L,1T
Sequences and series. Differential and Integral calculus of functions of several variables. Line and surface integrals. Ordinary differential equations. Emphasis throughout on applications.
(May not be combined with MAT 230/234/239/250 in any degree programme.)
Prerequisite: MAT 134/135/139/150

MAT 239 **Analysis** 2L,1T
Sequences and series. Differential and Integral calculus of vector valued functions of a vector variable, with emphasis on vectors in two or three dimensional Euclidean space. Line and surface integrals; vector analysis; Stokes' theorem; Fourier Series. (This course attends to careful formulation of results, without emphasis on proofs. Fulfils Physics prerequisites.)
(May not be combined with MAT 230/234/235/250 in any degree programme.)
Prerequisite: MAT 139/150

MAT 240F **Linear and Multilinear Algebra** 2L,1T
Dual, 2nd dual, factor spaces, adjoints, axiomatized inner products, multilinear algebra (tensors, tensor algebra, universal property, Grassman space, exterior algebra, determinant, permanent), proof of Jordan form, spectral properties.
Prerequisite: MAT 140

MAT 244F **Differential Equations** 2L,1T
Ordinary differential equations of first and second order, solution by series and integrals, linear systems of first order differential equations, difference equations, numerical methods.
(May not be combined with APM 251/331F in any degree programme.)
Prerequisite: MAT 139/150
Co-requisite: MAT 239

MAT 245S **Geometry I** 2L,1T
Various geometries and the relevant groups of transformations: Euclidean, inversive, projective, affine, non-Euclidean. The treatment is not restricted to real geometry.
(May not be combined with MAT 325 in any degree programme.)
Prerequisite or *Co-requisite:* MAT 140

MAT 250 **Analysis II** 2L,1T
Topology of E_n, the real number system, compactness, connectedness, completeness; and uniform continuity. Differential calculus of vector–valued functions of a vector variable, including implicity and inverse function theorems. Lagrange multipliers. Integration, transformation and evaluation of multiple integrals. Calculus of differential forms. Integration of forms, line and surface integrals, Stokes' Theorem.
(May not be combined with MAT 230/234/235/239 in any degree programme.)
Prerequisite: MAT 150
Co-requisite: MAT 240

MAT 300 **Algebra** 2L,1T
Number systems, groups, rings, fields, vector spaces and perhaps some applications.
(May not be combined with MAT 340/345 in any degree programme.)
Prerequisite: One previous MAT course

MAT 314F **Point–Set Topology** 2L,1T
Elementary topology, metric spaces, convexity in linear spaces, fixed point theorems.
Reference: Chinn and Steenrod, *First Concepts of Topology.*
(May not be combined with MAT 339/350 in any degree programme.)
Prerequisite: MAT 230/234/235/239/250

MAT 319S **Introduction to Complex Analysis** 2L,1T
Cauchy's theorem, residue calculus, conformal mappings, an introduction to Fourier series.
Reference: Churchill, *An Introduction to Complex Variables.*
(May not be combined with MAT 330/339 (or †MAT 355) in any degree programme.)
Prerequisite: MAT 230/234/235/239/250

MAT 320 **20th Century Mathematics** 2L,1T
A continuation of Mathematics 220. Major developments of the twentieth century, such as new fields of application in the social and biological sciences, new developments in logic and foundations of mathematics, mathematical statistics, the computers and computer science, abstract algebra, abstract analysis, and topology.
(Not offered 1970–71)
Prerequisite: MAT 220

MAT 325 **Geometry** 2L,1T
Introduction to Euclidean geometry, with emphasis on the axiomatic method, modification of the axioms to yield projective, affine and non-Euclidean forms of geometry.
Reference: H. S. M. Coxeter, *Introduction to Geometry.*
(May not be combined with MAT 245S in any degree programme.)
Prerequisite: MAT 225/140

MAT 330 **Complex Analysis** 2L,1T
Complex plane and Riemann sphere; the Möbius group. Elementary functions; analytic functions, elementary conformal mapping. Cauchy's integral formula and its consequences. The residue calculus. Taylor and Laurent series; infinite products. Riemann mapping theorem. Elliptic functions. Harmonic functions: the Dirichlet problem. Analytic continuation; monodromy theorem. Linear differential equations.
(May not be combined with MAT 319S/339 (or †MAT 330/355) in any degree programme.)
Prerequisite: MAT 250

MAT 339 **Advanced Analysis** 2L,1T
Point set theory, applications to analysis, complex variable theory, residue calculus, Bessel functions, Legendre functions, simple boundary–value problems.
(May not be combined with MAT 314F/319S/330/350 (or †MAT 355) in any degree programme.)
Prerequisite: MAT 239/250

MAT 340 **Algebra I** 2L,1T

An introduction to the central ideas of modern algebra, including the structure of groups and modules, factorization in rings, finite fields; Galois theory.
References: I. N. Herstein, *Topics in Algebra;* S. Lang, *Algebra.*
(May not be combined with MAT 300/345 in any degree programme.)
Co-requisite: MAT 240

MAT 345 **Algebraic Structures** 2L,1T

A survey course in modern algebra including set theory, elementary number theory, groups, rings, polynomials, fields.
(May not be combined with MAT 300/340 in any degree programme.)
Prerequisite: MAT 140/225

MAT 350 **Real Analysis** 2L,1T

Sets and Cardinals; Schröder–Bernstein theorem. Metric spaces. General topology: topological spaces, continuous maps; product, quotient and sub-spaces. Separation axioms, connectedness, compactness, Tychonoff's theorem. Completion of metric spaces. Normed linear spaces; duality. Introduction to Lebesque integration in E_n. Function spaces. Hilbert spaces; compact operators; integral equations.
(May not be combined with MAT 314F/339 (or †MAT 330) in any degree programme.)
Prerequisite: MAT 250

MAT 364F **Differential Geometry** 2L,1T

Differential geometry of curves and surfaces in E_3. Fundamental theorem of curves, fundamental forms of surfaces, equations of Gauss and Codazzi, constant Gauss curvature and minimal surfaces, parallel transport, the theorem of Gauss–Bonnet.
(May not be combined with †MAT 360 in any degree programme.)
Prerequisite: MAT 230/234/235/239/250 and MAT 225/140

MAT 369S **Introduction to Manifolds** 2L,1T

Geometry of manifolds. Manifolds, submanifolds, tensor fields, Lie and exterior derivatives, and riemannian connections, equations of structure, hypersurfaces of E_n, the the fundamental theorem of surfaces.
(May not be combined with †MAT 360 in any degree programme.)
Prerequisite: MAT 250 (Recommended preparation: MAT 364F)

MAT 399Y **Independent Work in Mathematics** Arranged

This course is designed for students who intend to pursue a career in mathematics. A prospective student should select his topic and adviser before the end of second year and discuss the topic with his adviser. The grade for the course will be based on the student's written report to be submitted by March 1.
Prerequisite: Consent of the Undergraduate Secretary and adviser

MAT 404F **Foundations** 2L,1T

Introduction to formal logic, model theory and recursion theory and their applications to the foundations of mathematics.
Co-requisite: MAT 340/345
Note: MAT 224S will be prerequisite starting in 1971–72.

MAT 409S **Mathematical Models in Linguistics** 2L,1T

The applications of mathematics to linguistics and the study of languages, in particular combinatorial applications, generative grammars, statistics of language, typology and style and topics of interest from current literature.

Prerequisite: MAT 345/340

Co-requisite: LIN 100 (or reading assigned by the instructor)

MAT 410 **History of Mathematics** 2L

The major emphasis is on the period since 1800 and on developing skill in information retrieval. Students will do general historical reading and will write papers on individually chosen topics.

Prerequisite: Five courses in university mathematics

MAT 414F **Introduction to Number Theory** 2L,1T

Elementary topics in number theory to include: arithmetic functions; polynomials in many variables over the residue classes modulo m, in particular Chevalley's Theorem; characters on the residue classes modulo m; character sums and the quadratic reciprocity law; representation of numbers as sums of squares; primes in an arithmetic progression.

Prerequisite: MAT 230/234/235/239/250 and MAT 140/225

MAT 419S **Number Theory** 2L,1T

Topics in analytic and algebraic number theory.

Prerequisite: (MAT 345 and 414F) /340

MAT 424F **Geometry II** 2L,1T

A continuation of MAT 245 including homographies and antihomographies and inversive distance in inversive geometry, finite inversive projective and affine planes; hyperbolic geometry in three dimensions; Clifford surfaces; and regular polytopes.

Prerequisite: MAT 245S or MAT 325

MAT 425 **Algebraic Topology** 2L,1T

Basic concepts of algebraic topology, homotopy, homology, cohomology with applications.

References: Massey, *Introduction to Algebraic Topology;* Dold, *Algebraic Topology.*

Prerequisite: MAT 350

Co-requisite: MAT 444F

MAT 429S **Classical Algebraic Geometry** 2L,1T

Algebraic curves and surfaces; Plücker's equations; inflections of a plane cubic; confocal quadrics; line geometry; Schläfli's double six; the cubic surface; Schur quadrices; Steiner trihedral pairs; connections with algebraic plane curves and with the theory of polytopes.

Prerequisite: MAT 245S/325

MAT 434F **Advanced Complex Analysis** 2L,1T

Riemann surfaces, covering spaces, Picard Theorem, $\bar{\delta}$-cohomology, Riemann–Roch theorem, sheaves, analytic continuation in one and several complex variables.

Prerequisite: MAT 330 (or †MAT 355) (Recommended preparation: MAT 369S (or †MAT 360)

MAT 439S **Differential Equations** 2L,1T
Existence and uniqueness theorems, qualitative behaviour, asymptotic properties, and eigenfunction expansions for ordinary differential equations; applications to partial differential equations of first order; equations of second order and systems.
Prerequisite: MAT 350

MAT 444F **Homological Algebra** 2L,1T
Tensor product of modules; the functions Tor and Ext: Exterior algebra over a module; chain complexes, homology, cohomology; the Kunneth sequences, universal coefficient theorem; exact sequences; global dimension.
Prerequisite: MAT 340/345

MAT 449S **Algebra II** 2L,1T
Topics in algebra (at most 2) to be selected in consultation with the students from: commutative algebra; field theory; simple groups; Lie algebras; invariant theory.
Prerequisite: MAT 340

MAT 454F **Abstract Integration Theory and Applications** 2L,1T
Treatment of abstract theory; Haar measure; probability and infinite product measures; function spaces (L^p and Wiener integral); Fourier Series and harmonic analysis; Ergodic Theory.
Prerequisite: MAT 350

MAT 459S **Functional Analysis** 2L,1T
Fundamental properties and theorems of Banach spaces and Banach algebras; Gelfand Representation Theorem; systematic study of the project projections in Hilbert spaces; spectral theorem for bounded normal operators.
Prerequisite: MAT 350

MAT 464F **Combinatorial Theory** 2L,1T
Topics in discrete mathematics such as: graphs, maps, networks, games, bottleneck problems, enumeration, dependence, lattices, parentheses, linear programming, Möbius inversion, block designs, difference sets.
(May not be combined with †MAT 455 in any degree programme.)
Prerequisite: MAT 340/345

MAT 480F **Advanced Topics in Foundations, Topology or Manifold Theory** 2L,1T
MAT 480F is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

MAT 484F **Advanced Topics in Algebra or Geometry** Arranged
MAT 484F is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

MAT 485S **Advanced Topics in Foundations, Topology or Manifold Theory** Arranged
MAT 485S is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

MAT 489S **Advanced Topics in Algebra or Geometry** Arranged
MAT 489S is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

MAT 490F **Advanced Topics in Analysis** Arranged
MAT 490F is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

MAT 495S **Advanced Topics in Analysis** Arranged
MAT 495S is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

MAT 499 **Readings in Mathematics** Arranged
Students enroling in this course will do independent study in mathematics under the direction of a faculty member. Persons wishing to take this course must have the consent of the Undergraduate Secretary in Mathematics and of the prospective supervisor.

STATISTICS

STA 232 **Introduction to Statistics** 2L,1T
Elements of probability theory, common distributions, point and interval estimation, standard significance tests, introduction to least squares and analysis of variance.
Prerequisite: MAT 110/130/134/135/139/150

STA 242 **Applied Statistics** 2L,1T
Elements of probability theory, standard distributions, sampling, hypothesis testing and confidence intervals, least squares and regression, analysis of variance, introduction to the design of experiments and sample surveys.
Prerequisite: MAT 134/135/139/150

STA 252 **Probability and Statistics** 2L,1T
Combinatorial probabilities, discrete and continuous distributions, expectation, generating functions, sampling distributions, point and interval estimation, tests of hypotheses, regression theory, elements of the design of experiments and analysis of variance.
Prerequisite: MAT 139/150
Co-requisite: MAT 140

STA 332F **Experimental Design** 2L,1T
The statistical aspects of collecting and analyzing experimental data; analysis of variance, orthogonal designs.
Prerequisite: STA 232/242/252

STA 342S **Regression Analysis** 2L,1T
Regression theory with applications to the analysis of non-orthogonal data.
Prerequisite: STA 332F/242/252(Recommended preparation: MAT 140/225)

STA 357 **Probability** 2L,1T
A thorough treatment of joint probability distributions, sequences of random variables, sums of independent random variables, generating functions, law of large numbers and central limit theorem in Bernoulli case, introduction to Markov chains.
Prerequisite: STA 252 and MAT 239/250

STA 432F **Estimation and Hypothesis Testing** 2L,1T
Likelihood, sufficiency, classical theory of estimation and hypothesis testing, introduction to decision theory.
Prerequisite: STA 252 and MAT 239/250

STA 442S **Structural Inference** 2L,1T
Introduction to structural inference; relationship of structural inference to other forms of statistical inference.
Prerequisite: STA 432F

STA 447F **Probability Theory** 2L,1T
Primarily a theoretical course, the emphasis being on limit theorems such as the strong law of large numbers and the convergence of sums of random variables. Students with an interest in measure theory are advised that the study of probability offers an example of its application.
Reference: Feller, *An Introduction to Probability Theory and Its Applications* (Vol. 1 & 2)
Prerequisite: STA 357
Co-requisite: MAT 350

STA 457S **Time Series Analysis** 2L,1T
This course is an introduction to the theory of stationary processes. Topics to be covered include: a discussion of mathematical prerequisites, harmonic analysis of weakly stationary processes, and prediction theory.
Prerequisite: STA 357

STA 482F **Advanced Topics in Statistics** 2L,1T
STA 482F is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

STA 487F **Advanced Topics in Probability** Arranged
STA 487F is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

STA 492S **Advanced Topics in Statistics** Arranged
STA 492S is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

STA 497S **Advanced Topics in Probability** Arranged
STA 497S is a graduate level course.
Co-requisite: Three other 400 level courses in mathematics: consent of the Instructor and the Undergraduate Secretary of the Department is required.

MEDICINE

Courses Given by Members of the Faculty of Medicine

ANATOMY

COURSES OPEN TO SECOND- AND HIGHER- YEAR STUDENTS

ANA 200 **Human Anatomy and Histology** 2L,2P
A general survey of the gross and microscopic anatomy and embryology of the human body. The course will cover basic cytology and the gross and microscopic anatomy of the various systems and structures of the body. At appropriate times during the course embryological development will be considered. Wherever possible, structure will be related to function.
Prerequisite: BIO 100/120

BIOCHEMISTRY

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

BCH 320 **Introductory Biochemistry** 2L
A lecture course in General Biochemistry, consisting of introduction to Macromolecular Biochemistry, and Metabolic Biochemistry.
Prerequisite: BIO 100/120, CHM 235 (or †CHM 221)

BCH 321 **Introductory Biochemistry** 2L,1T
A lecture course in General Biochemistry, consisting of introduction to Macromolecular Biochemistry, and Metabolic Biochemistry.
Prerequisite: BIO 100/120, CHM 220, 235 (or †CHM 221)
Co-requisite: CHM 220, 340

BCH 370 **A laboratory Course in Biochemical Techniques** 3P
Terminal course for non-specialists.
Prerequisite: CHM 235 (or †CHM 221)
Co-requisite: BCH 320

BCH 371 **A Laboratory Course in Biochemistry** 3P
To complement BCH 321 and prepare for BCH 471
Prerequisite: CHM 235 (or †CHM 221)
Co-requisite: BCH 321

COURSES OPEN TO FOURTH-YEAR STUDENTS

Note: Each of BCH 421-426 will be offered for 2 years in a 3-year cycle.

BCH 421S **Structure and Function of Proteins** 2L
Prerequisite: BCH 320/321

BCH 422F **Biochemistry of Membranes** 2L
Prerequisite: BCH 320/321

BCH 423F **Metabolic Enzymology and Control Mechanisms** 2L
Prerequisite: BCH 320/321

BCH 424S **Bio-organic Mechanisms** 2L
Prerequisite: BCH 320/321

BCH 425F **Nucleic Acids and Protein Synthesis** (Not offered 1970–71) 2L
Prerequisite: BCH 320/321

BCH 426S **Physical Biochemistry** (Not offered 1970–71) 2L
Prerequisite: CHM 220 and BCH 320/321

BCH 471 **Advanced Biochemistry Lab.** 8P
Prerequisite: BCH 371

PHARMACOLOGY

PHM 470 **The Action of Drugs** 2L,3P
A course of instruction consisting of lectures supplemented by a programme of demonstrations, required reading, tutorials and laboratory exercises, on the nature of drugs and chemicals and the biological mechanisms of their interaction with man and animals.
Prerequisite: CHM 235 (or †CHM 221)
Prerequisite or *Co-requisite:* BCH 320/1 and PSL 322

PHYSIOLOGY

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

PSL 321 **Elementary Human Physiology** 2L
An elementary lecture course in the principles of human physiology.
(May not be combined with PSL 322 in the same year.)
Prerequisite: BIO 100/120

PSL 322 **Human Physiology** 3L
A lecture course covering the field of human physiology, including blood, circulation and respiration, digestion, endocrine glands, nerve and muscle, central nervous system and special senses.
(May not be combined with PSL 321 in the same year.)
Prerequisite: ANA 200/ZOO (250 & 251) (or †ZOO 350 & 351), BIO 100/120, CHM 235 (or †CHM 221), MAT 130/135/139/150, PHY 140 (or †PHY 135)/130/120
Co-requisite: BCH 321/320

PSL 373Y **Human Physiology** 4P
Laboratory to accompany PSL 322.
Co-requisite: PSL 322

COURSES OPEN TO FOURTH-YEAR STUDENTS

PSL 424 **Endocrinology** 2T
A series of lectures and demonstrations dealing with the functions of endocrine glands and their regulations.
Prerequisite: PSL 322 (or †PSL 422) & BCH 321/320
Co-requisite: PSL 322/BCH 321/320 (if not taken as prerequisite.)

PSL 427 **Electrophysiology** 2T
An advanced course in electrophysiology.
Prerequisite: PSL 322 (or †PSL 422), MAT 130/135/139/150 (MAT 230/235/239 also recommended.)

PSY 429S **Integrative Physiology** 2T
Description and analysis of interactions between different functions of the organism, including constants, variables and mathematical functions in the description of biological phenomena, elements of systems analysis, theory of feedback mechanisms and an analysis of selected biological feedback mechanisms.
Prerequisite: PSL 322 (or †PSL 422/426) & PSL 373Y (or †PSL 473/476)

PSL 430 **Mathematical Aspects of Physiology** 2T
A course for students in biological science covering certain areas of mathematics (excluding statistics) useful in physiology, biophysics and medicine.
Prerequisite: MAT 130/135/139/150 (BIO 100/120 recommended)

PSL 475F **Laboratory in Experimental Surgery and Physiology** Arranged 7P
A laboratory course demonstrating principles and techniques in Experimental Surgery, Biophysics and Physiology. (Limited number.)
Prerequisite: PSL 322 & 373Y (or †PSL 422 & 473)/(426 & 473)
Co-requisite: PSL 322 & 373Y

PSL 498 **Project in Physiology** Arranged 7P
Prerequisite: PSL 322 & 373Y (or †PSL (422 & 473)/(426 & 473)
Co-requisite: PSL 322 & 373Y

MICROBIOLOGY

See "Hygiene"

MUSIC

Note: Not all of MUS 329, 424, 428, 429 will be offered in one year; the selection will depend on the number of requests.

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

MUS 100 **The Study of Music Literature** 2L,1T
An introduction to world music dealing with the repertory of western music from the Middle Ages to the 20th century, non-western music of high civilizations, and popular music. Discussion of form, style and the inter-relationship of music and culture. Required listening and reading lists are distributed at the beginning of the year.

MUS 120 **Materials of Music I** 2T,2P

Harmony: triads, non-harmonic materials, dominant seventh and derivatives, secondary dominants, simple modulation. Elementary forms, and analysis of 18th- and 19th-century literature. Sight singing; melodic, rhythmic and harmonic dictation. Keyboard harmony: chords and scales in all major and minor keys; playing of cadence types; modulation to closely related keys; realization of elementary figured bass. Two-part transposition; and score reading in five clefs. Sight harmonization of simple melodies.
Prerequisite: Students wishing to enter MUS 120 must demonstrate that (a) they possess the ability to read and perform music and (b) they have a knowledge of musical grammar. To satisfy (b) they may submit certificates of the Royal Conservatory of Music of Toronto showing successful completion of Grade II theory and Grade III harmony or their equivalent, or may ask for a special examination.
Co-requisite: MUS 100

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

MUS 222 **Music of the 17th and 18th Centuries** 2T,2P

A seminar course which will examine in depth selected topics from the 17th and 18th centuries; also research methods and music bibliography: music editions, sources and reference works.
References: selected scores and Duckles, *Music Reference and Research Materials*, 2nd Edition (Free Press)
Prerequisite: MUS 100, 120
Co-requisite: MUS 240

MUS 223 **Music in the Contemporary World** 2L,1T

The modern repertoire, including electronic, non-Western, and popular music developments. A non-specialist view of recent historical, theoretical, technological, and social advances in music.
Prerequisite: MUS 100

MUS 240 **Materials of Music II** 2T,2P

Chromatic harmony and an introduction to twentieth century techniques. Extended forms, and analysis of 19th- and 20th-century literature. Keyboard harmony improvization, altered chords, sight harmonization, figured bass in baroque style, advanced transposition; three-part score reading in five clefs, transposing instruments and simple string quartet scores. Sight singing and dictation.
Prerequisite: MUS 100, 120
Co-requisite: MUS 222

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

MUS 322 **Music of the 19th and 20th Centuries** 2T

A seminar course which will examine in depth selected topics from 1800 to the present; also the growth of musical institutions (symphony orchestras, music schools, etc.) and the broadening scope of music study (musicology, ethnomusicology, etc.).
References: Abraham, *A Hundred Years of Music* (Duckworth); Longyear, *Nineteenth Century Romanticism in Music* (Prentice–Hall); Austin, *Music in the 20th Century* (Norton); selected scores.
Prerequisite: MUS 222, 240

MUS 323 **Instrumental Music** 2L,1T
A detailed study of orchestral, chamber and solo repertoire from the eighteenth century to the present; instrumental characterisitics and sounds; musical forms.
(May not be combined with †MUS 220/300 in any degree programme.)
Prerequisite: MUS 100

MUS 325 **Music of North America** 2T
Music in the New World from the early settlers to the 20th century.
References: Chase, *America's Music,* second edition (McGraw–Hill); Kallmann, *A History of Music in Canada, 1534–1914* (Toronto).
Prerequisite: MUS 222, 240

MUS 329 **Musical Criticism: Aesthetics and Analysis** 2T
An investigation of tacit assumptions and concepts about analysis (structural elements of style: rhythm, melody, harmony, form) and aesthetics (value criteria of beauty, perception, significance, expression). Fall term: a historical survey of western and non-western thought; Spring term: contemporary writings. Students will read and discuss various 20th century writers.
Prerequisite: MUS 222, 240

MUS 340Y **Counterpoint, Eighteenth Century Style** 1T
Counterpoint in 18th-century style.
Prerequisite: MUS 222, 240

MUS 343Y **Musical Acoustics** 1T
Physical and physiological determinants of sensations of sound. Properties of sound. Formation of scales and tone systems. Problems of tuning and temperament.
Reference: Bartholomew, *Acoustics of Music* (Prentice–Hall).
Prerequisite: MUS 222, 240

MUS 344Y **Keyboard Harmony** 1T
Advanced work in specialized fields of harmony, improvization, and score reading (including vocal and orchestral scores.)
Prerequisite: MUS 222, 240

MUS 345 **Orchestration** 2T
Scoring for various combinations of woodwinds, horns, strings, and timpani. Special problems of piano transcription. Study of selected scores.
Prerequisite: MUS 222, 240

MUS 348Y **Counterpoint, Sixteenth Century Style** 1T
Counterpoint in 16th-century style.
Prerequisite: MUS 222, 240

COURSES OPEN TO FOURTH-YEAR STUDENTS

MUS 422 **Medieval and Renaissance Music and its Notation** 2T,2P
A seminar course dealing with four selected topics for in depth study; musical paleography including neumes, modal notation, black and white mensural notation,

keyboard and lute tablatures, transcription techniques and editorial practices. *References:* Crocker, *History of Musical Style* (McGraw–Hill); Reese, *Music in the Middle Ages,* and *Music in the Renaissance* (Norton); Sparks, *Cantus Firmus in Mass and Motet* (U. of California Press); Apel, *The Notation of Polyphonic Music* (Medieval Academy); Parrish, *The Notation of Medieval Music* (Norton.)
Prerequisite: MUS 222, 240

MUS 423 **Vocal Music** 2L,1T
The major vocal forms: polyphony, solo song, cantata, opera, oratorio. However, such broader issues as singing styles, folk and primitive song, relation of words and music, and of vocal and instrumental music will be touched upon, including references to non-Western cultures.
Prerequisite: MUS 100

MUS 424 **Beethoven** 2T
The man and his music; and study in depth of topics such as: The last quartets, Beethoven's contemporaries, the sketch books, Beethoven today.
Reference: selected scores.
Prerequisite: MUS 222, 240

MUS 428 **Schönberg** 2T
Arnold Schönberg's contribution to music, with several aspects investigated in depth: his relationship with the 15th century and the baroque era; *Pierrot Lunaire* and the puppet complex; texts, operas and psychological symbols.
References: orchestral score of *Erwartung; Arnold Schönberg, Style and Idea; Pierrot Lunaire;* reading assignments.
Prerequisite: MUS 222, 240

MUS 429 **Opera** 2T
Musical theatre viewed from its literary, musical, historical, dramatic, sociological and aesthetic aspects. Two or three topics for in-depth study will be chosen.
Reference: Kerman, *Opera as Drama* (Vintage); also some scores for class study.
Prerequisite: MUS 222, 240

MUS 440Y **Fugue** 1T
Fugue in three or four parts. Analysis of selected fugues, from the baroque to the present.
Prerequisite: MUS 340Y/348Y

MUS 441Y **Analytical Technique** 1T
Harmonic, contrapuntal and structural analysis of selected works from Bach to the end of the 19th-century.
Prerequisite: MUS 222, 240

MUS 442Y **Contemporary Analysis** 1T
Analysis of selected 20th-century works
Prerequisite: MUS 222, 240

MUS 443 **Introduction to Ethnomusicology** 2T
Descriptive and comparative studies of traditional musics, including tribal and Oriental

cultures and Western folk idioms. Analysis and transcription of field recordings. Methods employed in this research.
Text: Nettl, *Theory and Method in Musicology* (Free Press of Glencoe)
Prerequisite: MUS 222, 240 *and* 343Y

NEAR EASTERN STUDIES

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

NES 100 **The Ancient Near East** 1½L,1T
A general introduction to the archaeology, history, and literatures of the ancient Near East. Stress will be laid on the contributions made by the Egyptians, Babylonians, Assyrians and Hebrews to the development of civilization.
(May not be combined with NES 271/272 in any one year.)

NES 141 **Introductory Classical Hebrew** 3T
An introduction to biblical Hebrew prose. Grammar and selected texts.
(May not be combined with NES 142 in any one year.)

NES 142 **Introductory Modern Hebrew** 2T,2P
Use of an audio–lingual approach: classroom exercises supplemented by drill in the language laboratory. Section 1: Students with no previous acquaintance with Hebrew. Sections 2 & 3: Students with rudimentary knowledge of Hebrew.
(May not be combined with NES 141 in any one year.)

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

NES 211 **Introductory Akkadian** 3T
Introduction to Old Babylonian. Grammar and reading of selected texts.
Prerequisite: Arabic or Hebrew, normally ISL 214/NES 141/142 (or †ISL 100/†NLA 141/151)

NES 221 **Introductory Aramaic–Syriac** 3T
Introduction to Aramaic grammar. Readings from biblical Aramaic and the Elephantine papyri.
Prerequisite: Hebrew, normally NES 141/142 (or †NLA 141/151)

NES 231 **Introductory Middle Egyptian** 3T
Grammar and reading of easy hieroglyphic texts.

NES 241 **Intermediate Classical Hebrew** 3T
A continuation of NES 141. Rapid reading of selected biblical texts.
Prerequisite: NES 141/142 (or †NLA 141/151)

NES 242 **Intermediate Modern Hebrew** 3T
Intensive reading in post-biblical and modern Hebrew texts, including fiction, essays, and newspapers. Conducted in Hebrew.
Prerequisite: NES 142 (or †NLA 151)

NES 251 **Introductory Hellenistic Greek** 3T
An introduction to Koine Greek, particularly the language of the Septuagint. Extensive reading in Septuagint texts.
Prerequisite: XIII GRK/GRK 100
Co-requisite: NES 141

NES 261 **Early Biblical Literature in Translation** 1L,1T
A literary and historical study of the Hebrew canonical writings down to ca. 600 B.C., including the prophetic movement.

NES 262 **Classics of the Jewish Tradition in Translation** 1L,1T
A discussion course based on reading of major works of classical and medieval Judaism in translation.

NES 271 **Ancient Egypt** 1L,1T
The political and cultural history of Egypt from the close of the predynastic period to the conquest of Alexander the Great. Attention will be given to the archaeological and literary evidence. (NES 271 and 272 will be offered in alternate years, NES 271 in 1970–71, and not in 1971–72.)
(May not be combined with NES 100 in the same year.)

NES 272 **Ancient South–Western Asia** (Not offered 1970–71)
The political and cultural history of the peoples of ancient south–western Asia, such as the Sumerians, Babylonians, Assyrians, Hittites, Hebrews and Persians.
(NES 272 and 271 will be offered in alternate years, NES 272 in 1971–72, and not in 1970–71.)
(May not be combined with NES 100 in the same year.)

NES 273 **Medieval Jewish History to 1789** (Not offered 1970-71)

NES 281F **Prehistory of the Near East** 1L,1T
A survey of prehistoric man and his works, concentrating on Mesopotamia, Anatolia, Iran, Syria–Palestine, and Egypt to the end of the Early Bronze Age. Emphasis will be on the Neolithic and Urban Revolutions as social and economic developments which led to the rise of literate civilizations in the Near East.

NES 282S **The Art and Architecture of the Ancient Near East** 1L,1T

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

NES 311 **Intermediate Akkadian** 3T
Prerequisite: NES 211 (or †NLA 211)

NES 321 **Intermediate Aramaic** 3T
Palestinian Jewish Texts
Prerequisite: NES 221 (or †NLA 221)

NES 331 **Intermediate Egyptian** 3T
Middle Egyptian Texts
Prerequisite: NES 231 (or †NLA 231)

NES 341 **Prophetic Literature and Thought** 2T
Texts from Isaiah, Jeremiah, Amos
Prerequisite: NES 241 (or †NLA 241)

NES 342 **Problems in the Study of Classical Hebrew Literature** 2T
Prerequisite: NES 241 (or †NLA 241)

NES 343 **Medieval and Modern Hebrew Literature** (Not offered 1970-71)
Selections from Medieval Biblical commentaries, belles lettres, and philosophical texts. The modern essay and short story.
Prerequisite: NES 242

NES 351 **Intermediate Hellenistic Greek** 2T
Prerequisite: NES 251 (or †NLA 261)

NES 361 **Literature of Israel in Translation, c. 600 B.C.–200 A.D.** 1L,1T
Against the background of the life and culture of Western Asia, a study will be made of the history and religious thought of the Palestinian Jews from c. 600 B.C. to the time of the Mishna.

NES 362 **Modern Hebrew Literature in Translation** (Not offered 1970-71)

NES 371 **Modern Jewish History (1789 to the present)** (Not offered 1970-71)

COURSES OPEN TO FOURTH-YEAR STUDENTS

NES 411 **Advanced Akkadian** 3T
Prerequisite: NES 311 (or †NLA 430)

NES 421 **Syriac Texts** 3T
Prerequisite: NES 321 (or †NLA 432)

NES 431 **Advanced Egyptian** 3T
Late Egyptian texts
Prerequisite: NES 331 (or †NLA 433)

NES 441 **The Psalms** 2T
Prerequisite: NES 341 (or †NLA 301/321)

NES 442 **The Book of Ezekiel** 2T
Prerequisite: NES 341 (or †NLA 301/321)

NES 443 **Early Post-Biblical Hebrew** 2T
Mishna, Midrash, Qumran Scrolls
Prerequisite: NES 341 (or †NLA 301/321)

NES 444 **Seminar in Medieval and Modern Hebrew Literature** (Not offered 1970-71)
Prerequisite: NES 343

NES 451 **Advanced Hellenistic Greek** 2T
Prerequisite: NES 351 (or †GRK 450)

NES 461 **Apocalyptic Literature in Translation** 1T,1T
The rise of apocalyptic in the Old Testament; the Dead Sea scrolls; the inter-Testamental writings; apocalyptic material in the New Testament, including the Book of Revelation.

NES 471 **History of the Near East, c. 559–30 B.C.** 1L,1T
The political and cultural history of the Near East from the accession of Cyrus the Great to the death of Cleopatra with particular emphasis on the Hellenistic and early Roman periods.
(May not be combined with NES 100 (or †NEH 111) in any degree programme.)

NES 481 **Problems in the Archaeology of the Ancient Near East** 2T
(May not be combined with NES 100/281F/282S (or †NEH 111/211F/212S) in any degree programme.)

PALI

See "East Asian Studies"

PARASITOLOGY

See "Hygiene"

PERSIAN

See "Islamic Studies"

PHARMACOLOGY

See "Medicine"

PHILOSOPHY

Note: Two Philosophy curricula are offered: ONE by St. Michael's College and ONE by the University Department which includes the College Departments of University College (including New and Innis Colleges), Victoria College and Trinity College. A student may, in consultation with the Academic Secretaries of the St. Michael's College Department and the other Departments involved, choose courses from both curricula.

University Department Courses

Note: All PHL courses in this group are open to students in any year provided they meet the stated prerequisites and co-requisites.

PHL 100 **Introduction to Philosophy** 2L,1T
An introduction to logic and to some of the main problems of Philosophy.

PHL 200F **Problems of Ethics** 2L
An introduction to some main problems in moral philosophy.

PHL 200S **Problems of Ethics** 2L
The same as PHL 200F.

PHL 201F **History of Ethics** 2L
An historical introduction to the study of Ethics.

PHL 201S **History of Ethics** 2L
The same as PHL 201F.

PHL 202F **Problems of Political Philosophy** 2L
Introduction to some of the main problems in Political Philosophy.

PHL 202S **Problems of Political Philosophy** 2L
The same as PHL 202F.

PHL 203F **History of Political Philosophy** 2L
An historical introduction to the study of Political Philosophy.

PHL 203S **History of Political Philosophy** 2L
The same as PHL 203F

PHL 204S **Contemporary Social Issues** 2L
A philosophical study of some current problems of contemporary society.

PHL 205F **Philosophy of Religion** 2L

PHL 206F **Modern Symbolic Logic** 2L

PHL 206S **Modern Symbolic Logic** 2L
The same as PHL 206F.

PHL 207S **Inductive Logic** 2L

PHL 208F **Aesthetics** 2L
Types of aesthetic theory and problems in the philosophy of art.

PHL 209F **Introduction to the Philosophy of Music** 2L
Types of aesthetic theory with special emphasis on problems in the Philosophy of Music.

PHL 210S **Philosophy in Literature** 2L

PHL 211F **Plato and his Predecessors** 2L
An introduction to early Greek Philosophy from the pre-Socratics to Plato.

PHL 212S **Aristotle and Later Greek Philosophy** 2L
A systematic study of Aristotle's central doctrines.

PHL 213F **A History of Early Modern Philosophy I: Seventeenth Century Philosophical Thought** 2L
A historical survey of 17th century philosophical thought including both minor and major intellectual figures, from the Renaissance to the Enlightenment.

PHL 214S **A History of Early Modern Philosophy II: Eighteenth Century Philosophical Thought** 2L
A historical survey of 18th century philosophical thought including both minor and major intellectual figures, from the Enlightenment to the age of Reason.

PHL 215F **Introduction to Existentialism and Phenomenology** 2L

PHL 216F **Analytic Philosophy** 2L
Philosophical analysis: aims, assumptions and methods.

PHL 217F **Introduction to the Theory of Knowledge** 2L
An introduction to some of the central epistemological problems: e.g., knowledge and belief, perception, necessary truth, induction.

PHL 218F **Introduction to Metaphysics** 2L
An introduction to some of the central metaphysical problems: e.g., substance, time, causality.

PHL 219S **The Philosophy of Language** 2L
Philosophical problems concerning the nature of language and its relation to the world.

PHL 220S **The Philosophy of Mind** 2L
An introduction to some of the central problems in the philosophy of mind; e.g., personal identity, theory of action.

PHL 221S **Medieval Philosophy** 2L

PHL 222F **Special Topics** 2L
This slot will be filled where someone wishes to offer an introductory lecture course in areas not standardly covered. A topic will not necessarily be offered under this number each year.

PHL 222S **Special Topics** 2L
The same as PHL 222F.

PHL 223S **Philosophy of Judaism** 2L

PHL 300F **The Philosophy of the Social Sciences** 2L
An analysis of some of the theoretical and methodological assumptions of the Social Sciences.
Prerequisite: Two courses in the Social Sciences.

PHL 301F **Philosophy of History I.** 2L
Prerequisite: Two courses in History or Philosophy.

PHL 302S **Philosophy of History II** 2L
Prerequisite: PHL 301F

PHL 303F **Philosophy of Science** 2L
An analysis of some of the theoretical and methodological assumptions of the physical sciences.
Prerequisite: Two courses in Philosophy or one course in the Natural Sciences or Mathematics.

PHL 304F **Philosophy of Law** 2L
An examination of some central problems in the Philosophy of Law, e.g., What is a law? A legal system?
Prerequisite: Two courses in Philosophy, Social Science or Law.

PHL 305S **Metaphysics Seminar** 2L
A seminar course dealing with specific problems in metaphysics; e.g. space and time, existence, change, and substance.
Prerequisite: PHL 218F or any two courses in Philosophy.

PHL 306S **Epistemology Seminar** 2L
A seminar course dealing with specific problems in the theory of knowledge; e.g., perception, necessary truth, knowledge and belief, and induction.
Prerequisite: PHL 217F or any two courses in Philosophy.

PHL 307F **Plato Tutorial** 2T
A concentrated examination of central problems in the major works of Plato. Not more than three students will be assigned to each tutor.
Prerequisite: Two courses in Philosophy.
Co-requisite: At least one course in Philosophy.

PHL 308S **Aristotle Tutorial** 2T
A concentrated examination of central problems in the major works of Aristotle. Not more than three students will be assigned to each tutor.
Prerequisite: PHL 307F (or †PHL 305F)

PHL 309F **Descartes and Locke Tutorial** 2T
A concentrated examination of central problems in the major works of Descartes and Locke. Not more than three students will be assigned to each tutor.
Prerequisite: Two courses in Philosophy.
Co-requisite: At least one course in Philosophy.

PHL 310S **Berkeley and Hume Tutorial** 2T
A concentrated examination of central problems in the major works of Berkeley and Hume. Not more than three students will be assigned to each tutor.
Prerequisite: PHL 309F (or †PHL 307F)

PHL 311F **The Rationalists** 2L
A systematic examination of the central philosophical problems in Descartes, Leibnitz, and Spinoza.
Prerequisite: Two courses in Philosophy.

PHL 312S **The Empiricists** 2L
A systematic examination of the central philosophical problems in Locke, Berkeley and Hume.
Prerequisite: Two courses in Philosophy.

PHL 313F **Kant** 2L
A systematic study of *Critique of Pure Reason.*
Prerequisite: Two courses in Philosophy. (Recommended, PHL 309F/310S/311F/312S (or †PHL 307F/308S/211F)

PHL 314F **Epistemology Tutorial I** 2T
A concentrated examination of central problems in epistemology e.g. necessary truth, perception, knowledge and belief. Not more than three students will be assigned to each tutor.
Prerequisite: Two courses in Philosophy. (Recommended 206F/S)
Co-requisite: At least one course in Philosophy.

PHL 315S **Epistemology Tutorial II** 2T
A concentrated examination of central problems in epistemology e.g. necessary truth, perception, knowledge and belief. Not more than three students will be assigned to each tutor.
Prerequisite: PHL 314F (or †PHL 311F)

PHL 316F **Nineteenth Century German Philosophy** 2L
Prerequisite: PHL 313F (or †PHL 310S) or three courses in Philosophy;
Recommended PHL 307F, 308S, 309F, 310S and 311F (or †PHL 305F, 306S, 307F, 308S and 211)

PHL 317S **Twentieth Century British Philosophy: Russell, Moore, and Wittgenstein** 2L
Prerequisite: PHL 206F/S

PHL 318S **Problems in the Philosophy of Music** 2L
A systematic examination of central problems in the Philosophy of Music.
Prerequisite: PHL 208F (or †PHL 204F) or 209F

PHL 320S **Problems in Existentialism and Phenomenology** 2L
Prerequisite: PHL 215F or 313F (or †PHL 213S or 310S)

PHL 321F **Contemporary Ethics** 2L
An investigation of current trends and problems in the fields of moral philosophy and metaethical theory.
Prerequisite: PHL 200F/S or 201F/S

PHL 322S **Contemporary Political Philosophy** 2L
An investigation of current trends and problems in the field of political philosophy.
Prerequisite: PHL 202F/S or 203F/S

PHL 323F **Marxism–Leninism** 2L
A philosophical examination of the political, economic, social and metaphysical problems in Marxist – Leninist Theory.
Prerequisite: Two courses in Philosophy.

PHL 324S **Philosophical Problems of Revolutionary Thought** 2L
A philosophical study of political radicalism.
Prerequisite: PHL 322S (or †PHL 202S)/323F

PHL 325S **Hegel** 2L
A systematic examination of central problems in the doctrines of Hegel.
Prerequisite: PHL 313F (or †PHL 310S)

PHL 326S **Problems in the Philosophy of Religion** 2L
A systematic examination of specific problems in the Philosophy of Religion.
Prerequisite: PHL 205F

PHL 327F **Intermediate Logic** 2L
An advanced lecture course in modern symbolic logic.
Prerequisite: PHL 206F/S

PHL 328F **Philosophical Uses of Logic** 2L
A study of the application of the techniques of modern symbolic logic to selected problems in philosophy.
Prerequisite: PHL 206F/S

PHL 329S **Modal and Many-Valued Logics** 2L
Prerequisite: PHL 206F/S

PHL 330S **Set Theory** 2L
Prerequisite: PHL 206F/S (or †PHL 206F)

PHL 331S **Minds and Machines** 2L
A study of formal and cybernetic models of the mind and their significance for traditional problems in the philosophy of mind.
Prerequisite: PHL 206F/S

PHL 332F **Theories of Decision and Social Choice** (Not offered 1970-71)
An examination of formal theories of decision, games, social choice and utility, and their relationship to problems in moral, political, and social theory.
Prerequisite: PHL 206F/S

PHL 333F **Special Topics** 2L
Where someone wishes to offer an advanced lecture course in areas not standardly covered, a course will be offered under this title. A topic will not necessarily be offered each year.
Prerequisite: To be announced.

PHL 333S **Special Topics** 2L
The same as PHL 333F

PHL 334F **Special Tutorial Topics** 2T
Prerequisite: Two courses in Philosophy
Co-requisite: At least one course in Philosophy

PHY 334S **Special Tutorial Topics** 2T
The same as PHL 334F.

PHL 335F **Plato's Earlier Theory of Forms** 2T
Prerequisite: Two courses in Philosophy

PHL 336S **Aristotle's Philosophy of Mind** 2T
Prerequisite: Two courses in Philosophy

Selection of the following 400-series courses will be offered each year; each has a general prerequisite of at least two courses in Philosophy above the 200 level; some may have specific prerequisites. For the details of these courses, their particular prerequisites and of the term in which they are given consult the departmental *Handbook.*

PHL 400F **Advanced Topics in Epistemology** 2T

PHL 401S **Advanced Topics in Metaphysics** 2T

PHL 402F/S **Advanced Topics in Political Philosophy** 2T

PHL 403S **Advanced Topics in Ethics** 2T

PHL 404S **Advanced Topics in Phenomenology and Existentialism** 2T

PHL 405F **Advanced Topics in the Philosophy of Mind** 2T

PHL 406F/S **Theory of Action** (Not offered 1970-71)

PHL 407F/S **Philosophy of Biology** (Not offered 1970-71)

PHL 408F **Philosophy of Mathematics** 2T

PHL 409S **Philosophy of Physics** 2T

PHL 410F/S **Philosophy of Psychology** 2T

PHL 411F **Advanced Topics in the Philosophy of Science** 2T

PHL 412S **Advanced Topics in the Philosophy of the Social Sciences** 2T

PHL 413F/S **Selected Texts in the History of Philosophy** 2T

PHL 414F **Advanced Topics in Logic** 2T

PHL 415F **Philosophy of Spinoza** 2T

PHL 416F **Advanced Topics in Aesthetics** 2T

REL 405 **Seminar in Philosophy of Religion** 2T

PHILOSOPHY (ST. MICHAEL'S COLLEGE)

Note: Each of the following course descriptions indicates the range of topics or figures considered appropriate for the particular course. For more detailed information as to the current instructor, content, readings, etc., consult the annually revised booklet *SMC Philosophy Courses,* available at the office of the Departmental Secretary, Teefy Hall, St. Michael's College.

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

PHL 150 **Introduction to Philosophical Problems** 2L,1T
Students in philosophical conversation with staff on such issues as: the nature of philosophy, its differences from and relation to other disciplines; man: life, consciousness and personality; knowledge and belief, experience, correct reasoning and explanation; human values: norms, freedom, responsibility, law and society; the ultimately real, existence, mind, God, immortality.

PHL 151 **Classical Philosophy** 2L,1T
An introductory course in the history of ancient Greek philosophy, with emphasis on Plato and Aristotle, and including some of the following: the Presocratics – Heraclitus and Parmenides – Socrates, and later developments: in Stoicism, Skepticism, Epicureanism, and Neoplatonism. Reading of primary sources on key problems to be stressed.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

PHL 250 **Ethics** 2L
The attempt to settle disagreements about the most general standards of right and wrong; whether disagreements in morals can be resolved by reasoning; whether morality is exclusively subjective or the result of social conditioning; whether any moral code is binding.

PHL 251 **Logic** 2T
The study of criteria for valid reasoning and of formal patterns of deductive inference. The concepts and methods of traditional Aristotelian logic; a more extensive treatment of topics in contemporary symbolic logic: the propositional calculus and predicate calculus; their decision procedures; construction of formal deductive systems, with proofs of their logical adequacy.

PHL 252 **Philosophy of Man** 2L
The philosophical study of the nature of man and human activities. Different philosophical views will be considered on such topics as: perception, intellectual activity; freedom, conscience, the psychological conditions of moral action; self, body and mind.

PHL 253 **Social and Political Philosophy** 2L
A study of the heads under which we make value judgments about social and political arrangements: society and the state, justice, rights, equality, freedom, property, sovereignty, democracy, toleration, etc. Also current ideologies, or influential thinkers of the past, the selection to vary from year to year.

PHL 256 **Philosophical Examination of Religious Beliefs** 2T
A cretical study of philosophical arguments for and against religious belief, including such topics as: the nature and existence of God; the possibility of knowledge about God; revelation, faith, superstition; myth, metaphor and analogy; the consequences of religious belief for morality; religion and science.

PHL 257 **Aesthetics** 2T
The definition of art and its distinction from other human activities; classification of art; problems in the judgment of artifacts – the standpoints of artist, critic and viewer;

the epistemology of art as learned activity, its subject-matter, creativity and the "aesthetic experience".
Recommended background: One prior or concurrent course in Philosophy.

PHL 261 **Mediaeval Philosophy** 2T
The philosophies of the principal figures of the Mediaeval era, including Augustine, Anselm, Avicenna, Maimonides, Bonaventure, Thomas Aquinas, Duns Scotus, William of Ockham, and others, on such problems as: the being and nature of God, creation, finite beings, man and the soul, universals, and knowledge.
Recommended background: PHL 151

PHL 262 **Modern Philosophy to Kant** 2L
Knowledge of this period is important for understanding contemporary epistemology and metaphysics. The course will include some of the following: Descartes, Hobbes, Spinoza, Locke, Leibniz, Berkeley, Hume and Kant, on such topics as: God's existence, freewill, mind and body, the problem of evil, limits of human knowledge, reality of the external world, causality.
Recommended background: One prior or concurrent course in Philosophy.

PHL 263 **English Philosophy from Hobbes to Mill** 2L
An introduction, for students interested in English literature and history, to the important discussions of ethics and political philosophy in England between the Civil War and the extension of the franchise to the working class. It will touch on Hobbes, Locke, Butler, Price, Hutchinson, Hume, Bentham, James Mill, and J.S. Mill.

PHL 270F **Existentialism** 2L
A study of the more notable figures: Jaspers, Heidegger, Marcel, Sartre, together with some of the antecedent and associated thinkers: Kierkegaard, Nietzsche, and Camus.

PHL 271S **American Philosophy** 2L
A study of the principal figures of the nineteenth and twentieth centuries: Emerson, Royce, the critical realists, Santayana, and the Pragmatists: Peirce, James, and Dewey.

PHL 350 **Research Tutorial** Arranged
Directed work on an individually selected topic, leading to a research paper; subject to the approval of the department.
Prerequisite: Two of: PHL 351 – 371 (or †PHL 254,255,451,452,453,454)

PHL 351 **Philosophy of Science** 2T
A logical and philosophical approach to such topics as: induction, causality, space and time; explanation and laws of nature; the nature of observational and theoretical statements and their verification; the sufficiency of a scientific description of what there is, and the elements of theory construction.
Prerequisite: PHL 251

PHL 352 **Special Topics in Logic** (Not offered 1970-71)
An advanced course, to include the following: advanced quantificational logic; relational logic; Aristotle on the syllogism; Frege on the foundations of arithmetic; Russell on the theory of types; Wittgenstein on the foundations of mathematics; Godel's proof. Logical theory: predication, reference and meaning; analytic and synthetic propositions; truth; particular and general propositions.
Prerequisite: PHL 251

PHL 354 **Epistemology** 2T
A philosophical study of human knowledge, which aims to decide what constitutes a genuine claim to truth. The course will include such topics as: knowledge and opinion; elements of knowledge: perception, imagination, memory, understanding, reasoning; diverse kinds of knowledge: common sense, philosophy, science; truth and error, evidence, first principles.
Prerequisite or Co-requisite: One other course in Philosophy.

PHL 355 **Metaphysics** 2T
A philosophical study of reality, considered in its most basic aspect: its being or existence. Works of outstanding metaphysicians will ground discussion on such topics as: the nature, possibility, and language of metaphysics; being and beings; essence and existence; substance, causality, space and time; the supersensible, God, the Absolute, spirit, immortality.
Prerequisite or Co-requisite: One other course in Philosophy.

PHL 360 **Nineteenth Century Philosophy** 2T
The history of continental European philosophy from Kant, including some of the following: Fichte, Schelling, Hegel, Kierkegaard, Marx, Nietzche, Comte, Brunschwig.
Prerequisite or Co-requisite: One of PHL 262, 354, 355 (or †PHL 254, 255)

PHL 361 **Phenomenology and Existentialism** 2T
A study of these major figures: Husserl, Heidegger, Marcel, Sartre, Jaspers, Merleau–Ponty and Ricoeur, on such topics as the Ego, being–in–the–world, Being, consciousness, self–consciousness, phenomenological reduction, constitutional or intentional analysis, intrasubjectivity, intersubjectivity, time, historicity, incarnation, facticity, body, perception, and freedom.
Prerequisite: One of PHL 262, 354, 355 (or †PHL 254, 255)

PHL 362 **Analytic Philosophy** 2T
Different approaches in analytic philosophy from the early twentieth century will be examined in the treatment of such topics as: the nature of sense–data, logical atomism, the formal concept of existence, verifiability, the concept of truth, other minds, and persons. Writers will include Moore, Russell, Wittgenstein, Ayer, Ryle, Austin, and Strawson.
Prerequisite; One of PHL 262, 354, 355 (or †PHL 254, 255)
Prerequisite or Co-requisite: One of PHL 262, 354, 355, 360 (or †PHL 254, 255, 259)

PHL 370F **Seminar in Modern Thomists** 2T
A selection of twentieth century Thomist writers, including the Louvain group, on epistemological and metaphysical issues.
Prerequisite or *Co-requisite:* One of PHL 261, 262 (or †PHL 454) & PHL 360 (or †PHL 259)

PHL 371S **Seminar in Greek Philosophy** 2T
Selected texts in areas to be determined, such as metaphysics, theory of knowledge, ethics, etc.
Prerequisite: One course in the area.

PHYSICS

Note: The text listed at the end of a course description will not necessarily be the one used for the course. It will, however, give an indication of the level at which the course is to be presented.

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

PHY 100 **Physics and the Modern World** 2L,1T

A course intended to give the non-science student an appreciation of the nature of the 20th century physics. The material is almost entirely descriptive. It is chosen to introduce the student to problems of interest to today's physicists and to show the interaction between physics and the community.

Reference: Huggins, *Physics I.*

PHY 120 **Elementary Mechanics** 2L,1T,1½P

An introductory mechanics course based on the Berkeley Physics Course, Vol.1. Both the classical and relativistic points of view are discussed. A loosely structured laboratory which encourages individuality accompanies the lecture course. It is intended for students who plan to take the physics core in later years.

Reference: Kittel, Knight and Ruderman, *Mechanics,* Berkeley Physics Course, Vol.1.

(May not be combined with PHY 130/140 (or †PHY 135) in any degree programme.)

Prerequisite: XIII MAT A & B, PHY

Co-requisite: MAT 130/135/139/150

PHY 130 **Mechanics, Matter and Waves** 2L,1T,1½P

An introductory lecture course in classical and relativistic mechanics, wave motion and properties of matter. A loosely structured laboratory which encourages individuality accompanies the lecture course. It is intended for science students who expect to take at least one additional physics course in a later year.

Reference: Sears and Zemansky, *University Physics, Part 1.*

(May not be combined with PHY 120/140 (or †PHL 135) in any degree programme.)

Prerequisite: XIII MAT A

Co-requisite: MAT 130/135/139/150

PHY 140 **A Selection of Physics Topics** 2L,1T,1½P

Although intended as a complete course in physics this is not a survey course but rather one which presents a comprehensive introduction to a relatively small selection of important topics – mechanics, electromagnetic forces, waves, thermal physics, quantum physics and statistical physics. Laboratory experience forms a part of the course.

Reference: Armstrong and King, *Mechanics, Waves and Thermal Physics.*

(May not be combined with PHY 120/130 in any degree programme.)

Prerequisite: XIII MAT A

Co-requisite: MAT 130/135/139

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

PHY 220A **Electromagnetism** 2L,1T

A course in electromagnetism considered to be part of the physics core curriculum. Fields are emphasized rather than circuits. The electric field of moving charges is used

to develop the properties of the magnetic field. Maxwell's equations are established and solutions are obtained for the case of plane waves.
Reference: Purcell, *Electricity and Magnetism, Berkeley Physics Course* Vol. II. (May not be combined with PHY 230 in any degree programme.)
Prerequisite: PHY 120/130, MAT 130/135/139/150
Co-requisite: MAT 235/239/250

PHY 221F **Waves** 2L,½T
A core physics course on wave motion and oscillations. Topics include wave equation, harmonic waves, group velocity and pulses, polarization, reflection, impedance, sound waves and electrical waves of various kinds, birefringence, interference, diffraction, and coherence length.
Reference: Crawford, *Waves, Berkeley Physics Course* Vol. III
Prerequisite: MAT 130/135/139/150

PHY 222S **Thermal Physics** 2L,½T
A core physics course. Characteristic features of macroscopic systems, basic probability notions, the postulates of the statistical theory, entropy, absolute temperature, the canonical distribution and the laws of thermodynamics are discussed.
Reference: Reif, *Statistical Physics, Berkeley Physics Course,* Vol. V
Prerequisite: MAT 130/135/139/150

PHY 223F **Introduction to Theoretical Physics** 2L,1T
The aim of this course is to prepare the student for other theoretical courses such as PHY 302 and 400. Topics discussed include vector calculus, rotations and representations, relativity. Intended for students taking the physics core curriculum.
Reference: Taylor and Wheeler, *Spacetime Physics* (For the latter part of the course.)
Prerequisite: MAT 139/150
Co-requisite: MAT 235/239/250

PHY 224S **Elasticity and Fluid Mechanics** 2L
An optional course, with an emphasis on classical physics, for students taking the core in physics and particularly for those interested in geophysics and meteorology. Cartesian tensors and the properties of non-isotropic solids. Problems in elasticity, thermoelasticity, piezoelectricity, heat conduction. Hydrodynamics, ideal and viscous flows and a general discussion of the Navier–Stokes equations.
Reference: Hansen, *Fluid Mechanics.*
Prerequisite: PHY 120/130
Co-requisite: MAT 230/235/239/250

PHY 225F **Geophysics** 1L
A half course in Physics of the earth, atmosphere and magnet osphere, offered to students in science. The principal conclusions reached by geophysicists about the planet, its evolution, and the processes taking place on it are introduced, as well as an outline of the methods utilized in attacking current research problems.
Prerequisite: MAT 130/135/139/150

PHY 226S **Introduction to Electronics** 2L
This course, in physical electronics, is intended for all students of physics. The topics discussed are circuit analysis, the physics of tubes and transistors, and electronic cir-

cuits. The latter includes only circuits of importance for physical measurement.
Reference: Brophy, *Basic Electronics for Scientists,*
Prerequisite: PHY 220A/230 (1st term)
Co-requisite: PHY 227Y/230 (or †PHY 270Y) (2nd term)

PHY 227Y **Laboratory in Electricity, Optics, Electronics** 3P
Practical experience in the subject areas of electricity, optics and electronics, intended for students who plan to continue the study of physics.
(May not be combined with PHY 230 in any degree programme.)
Co-requisite: PHY 220/221F/223S.

PHY 230 **Electromagnetism and Modern Physics** 2L,1½P
A lecture and laboratory course in electricity, magnetism, optics, atomic, nuclear and elementary particle physics, designed as a complement to Physics 130 and intended for specialists in disciplines other than physics.
References: Weidner and Sells, *Elementary Classical Physics,* Vol. II and *Introduction to Modern Physics.*
(May not be combined with PHY 220 or 221F or 227Y (or †PHY 270Y) in any degree programme.)
Prerequisite: PHY 120/130/140 (or †PHY 135), MAT 130/135/139/150

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

The Department of Physics offers general tutorials for students taking 300- and 400-series courses. There is no credit given for participation in these tutorials. The Department recommends that students taking a considerable number of Physics courses include at least one of PHY 320, 321Y, 322 and 323Y in either their 3rd or 4th years. The 300-series courses following all have
Prerequisites: PHY 120/130 and MAT 130/135/139/150 and
Pre- or Co-requisites: PHY (220, 221F, 222S (or †PHY 226S))/230 MAT 230/235/239

PHY 300 **Quantum Physics** 2L
Schroedinger's theory of quantum mechanics, perturbation theory, one-electron atoms, magnetic moments, spin and relativistic effects, identical particles, multi-electron atoms. Examples will be taken from atomic physics, molecular physics and to a smaller extent nuclear and particle physics. A core course.
Reference: Eisberg, *Fundamentals of Modern Physics.*
(May not be combined with PHY 301 in any degree programme.)
Prerequisite: See above
Co-requisite: See above, and also APM 331F/351

PHY 301 **Atomic and Nuclear Physics** 2L
Introduction to wave mechanics and the Schroedinger equation. Its application to the hydrogen atom. Electron spin, Zeeman effect. Description of two electron atom. Angular momentum and L–S coupling. Many electron atoms, and the periodic table. Molecules and bonding. The H_2^+ and H_2 systems. The atomic nucleus, radioactivity, nuclear reactions. A less specialized version of PHY 300.
Reference: Beiser, *Perspectives of Modern Physics.*
(May not be combined with PHY 300 in any degree programme.)
Prerequisite: See above
Co-requisite: See above

PHY 302 **Electromagnetism** 2L

Electrostatics, special relativity, magnetic fields, Maxwell's equations, electromagnetic waves, Fresnel's equations, multipole radiation, Lienard–Wiechert potentials, Thomson scattering, Cherenkov radiation. A basic course which provides a desirable background to many of the 400-series courses.

Reference: Corson and Lorrain, *Introduction to Electromagnetic Fields and Waves*

Prerequisite: See above

Co-requisite: See above, and also APM 331F/351 or MAT 244F

PHY 303F **Themodynamics** 2L

The general principles of classical thermodynamics are discussed. Some representative applications are considered. Fluctuations and irreversible thermodynamics are treated. A core course for all specialist programs involving physics except those containing a thermodynamics course offered by the Chemistry Department.

Reference: Callen, *Thermodynamics.*

Prerequisite: See above

Co-requisite: See above

PHY 304S **Solid State Physics** 2L

Description of Crystal Structures. Diffraction of x-rays by crystals. Classification of solids. Elastic constants of crystals. Lattice vibrations. Thermal properties of solids. Dielectric properties.

Reference: Kittel, *Introduction to Solid State Physics.*

Prerequisite: See above

Co-requisite: See above

PHY 305S **Nuclear and Particle Physics** 2L

Important discoveries in nuclear and particle physics. Radioactivity and gross nuclear properties. Nucleons, nuclear forces and nuclear structure. Fission and the physical basis of nuclear power. Unstable particles: hadrons, hypernuclei and leptons. Tools of nuclear and high energy physics: accelerators, modern nuclear detectors. Some current research with these tools.

Reference: Shankland, *Atomic and Nuclear Physics.*

Prerequisite: See above

Co-requisite: See above

PHY 306F **Molecular Biophysics** 2L

The physical and chemical properties of some biologically important macromolecules in relation to their functions. Techniques such as sedimentation, chromatography, spectroscopy, scattering of photons and electrons. The course is designed to give students with a physics and chemistry background an insight into the application of the exact sciences to the solution of biological problems.

Reference: Watson, *Molecular Biology of the Gene.*

Prerequisite: See above

Co-requisite: See above

PHY 307F **Atomic and Radiation Physics** 2L

Particles and waves, atomic structure; x-rays; natural radioactivity; induced nuclear transformations; radiation-measurement technique; chemical and biological effects of

radiation; radiation protection. A course for the non-specialist.
Reference: Lapp and Andrews, *Nuclear Radiation Physics.*
Prerequisite: See above
Co-requisite: See above

PHY 308 **Exploration Geophysics** 2L
An introduction to the physical principles underlying the important methods of geophysical prospecting. Particular attention is given to seismic, gravitational, magnetic and electromagnetic methods. This course is designed primarily for geologists. Physics students see PHY 413.
Reference: Dobrin, *Introduction to Geophysical Prospecting.*
Prerequisite: See above
Co-requisite: See above, and also PHY 324Y

PHY 320 **Molecular and Solid State Physics Laboratory** 6P
The student may select a number of experiments in molecular and solid state physics from a list of available ones. The experiments are open-ended. The student may spend more or less time on any particular experiment depending on his interests. There is no set number of experiments required to obtain credit for the course.
(May not be combined with PHY 321Y in any degree programme.)
Prerequisite: See above
Co-requisite: See above

PHY 321Y **Molecular and Solid State Physics Laboratory** 3P
This course is half of PHY 320. May also be taken as PHY 321F or 231S.
(May not be combined with PHY 320 in any degree programme.)
Prerequisite: See above
Co-requisite: See above

PHY 322 **Nulear and Particle Physics Laboratory** 6P
Nuclear physics experiments and experiments with slow and fast muons from cosmic rays are available. The experiments are open-ended. The student may spend more or less time on any particular experiment depending on his interests. There is no set number of experiments required to obtain credit for the course.
(May not be combined with PHY 323Y in any degree programme.)
Prerequisite: See above
Co-requisite: See above

PHY 323Y **Nuclear and Particle Physics Laboratory** 3P
This course is half of PHY 322. May also be taken as PHY 321F or 321S.
(May not be combined with PHY 322 in any degree programme.)
Prerequisite: See above
Co-requisite: See above

PHY 324Y **Geophysics Laboratory I** 3P
A laboratory course in geophysical prospecting methods.
Prerequisite: See above
Co-requisite: See above

COURSES OPEN TO FOURTH- YEAR STUDENTS

A program including one or more of PHY 430, 431, 432 and 433, must be endorsed by the Department. The Department of Physics offers general tutorials for students taking 300- and 400-series courses. There is no credit given for participation in these tutorials. The 400-series courses following all have

Prerequisites: PHY 120/130, PHY (220, 221F, 222S (or †PHY 226S))/230, MAT 135/139/150 MAT 230/235/239

Pre- or *Co-requisites:* PHY 300/301, MAT 244F or APM 331F/351

PHY 400 **Quantum Theory** 2L

Waves and particles, wave packets, uncertainty principle, Schroedinger equation, expectation values, operators, eigenvalues, eigenfunctions, one-dimensional problems. Angular momentum, central force problems, Pauli spin theory, identical particles, Pauli principle, applications to atoms and molecules. Zeeman effect. Perturbation theory, secular equations, time dependent perturbation theory, transition probabilities. Charged particles moving in electromagnetic fields, scattering theory.

Reference: Merzbacker, *Quantum Mechanics.*

Prerequisite: See above

Co-requisite: See above

PHY 401 **Statistical Mechanics** 2L

Part I: Maxwell–Boltzmann, Bose–Einstein and Fermi–Dirac statistics with applications. Elementary theory of irreversible phenomena.

Part II: Theory of imperfect gases, phase transitions. The Boltzmann equation, fluctuation theory and correlation functions.

Reference: Reif, *Fundamentals of Statistical and Thermal Physics.*

(May not be combined with PHY 402F in any degree programme.)

Prerequisite: See above

Co-requisite: See above

PHY 402F **Introductory Statistical Mechanics** 2L

This course is part I of PHY 401.

(May not be combined with PHY 401 in any degree programme.)

Prerequisite: See above.

Co-requisite: See above

PHY 403 **Nuclear Physics** 2L

Nuclear Forces. The properties of nuclei and their description by means of the shell model and the collective model. Electromagnetic interaction with the nucleus. Weak Interactions. The theory of nuclear reactions. The course will include some atomic and high energy physics in order to emphasize the important connections of both subjects with nuclear physics.

References: Elton, *Nuclear Theory;* Roy and Nigam, *Nuclear Physics.*

Prerequisite: See above

Co-requisite: See above

PHY 404S **High Energy Physics** 2L

Description of the elementary particles and their decay. Symmetries: charge independence (SU2), strangeness conservation, SU3 and quarks. Notions of scattering theory

such as the S-Matrix, partial waves, unitarity, dispersion relations and Regge poles. Emphasis will be on the phenomenology.
Reference: Frazer, *Elementary Particles.*
Prerequisite: See above
Co-requisite: See above

PHY 405 **Solid State Physics** 2L
Free electron theory. Scattering from a rigid lattice. Pseudopotentials, band structure and Fermi surfaces. Electron-electron interactions, Quasi-particles. Lattice vibrations. Electron-phonon interaction. Superconductivity. Semiconductors and P-N junctions. Diamagnetism and paramagnetism. Ferromagnetism and antiferromagnetism.
Prerequisite: See above
Co-requisite: See above

PHY 406F **Interaction of Radiation with Matter** 2L
Polarization, diffraction and interference of electromagnetic waves. Holography. Metal optics. Crystal optics. Dispersion. Width of spectral lines. Electro-optical and magneto-optical effects.
Reference: Born and Wolf, *Principles of Optics*
Prerequisite: See above
Co-requisite: See above

PHY 407S **Magnetic Resonance** 2L
Motion of free spins, Macroscopic aspects. Crystal fields and the effective spin Hamiltonian. Magnetic interactions in a rigid lattice. Thermal relaxation in liquids and gases. Thermal relaxation in solids. Electric quadrupole effects. Dynamic nuclear orientation. Techniques: NMR, EPR, molecular beams, optical pumping, etc.
References: Slichter, *Principles of Magnetic Resonance;* Pake, *Parmagnetic Resonance.*
Prerequisite: See above
Co-requisite: See above

PHY 408F **Molecular Physics** 2L
Treatment of the spectra of molecules and molecular crystals based mainly on symmetry considerations. Theory of groups and group representations. Born–Oppenheimer approximation. Rotation and vibration of diatomic and polyatomic molecules. Selection rules. Crystallographic point groups. Rotational and vibrational excitons.
Reference: Tinkham, *Group Theory and Quantum Mechanics.*
Prerequisite: See above
Co-requisite: See above

PHY 409S **Quantum Optics** 2L
Stimulated emission. Laser theory. Coherence. Non-linear optics including harmonic generation, parametric processes, stimulated scattering and self–focussing.
References: Bloembergen, *Non-linear Optics,* Lengyel, *Lasers.*
Prerequisite: See above
Co-requisite: See above

PHY 410 **Relativity Theory** 2L
Special theory: principle of relativity, Lorentz transformations. Minkowski space, tensor algebra. Relativistic particle dynamics, collision theory. Relativistic field theory,

hydrodynamics, Maxwell field, electrodynamics of material bodies, Klein–Gordon field. General theory: principle of equivalence, general covariance, tensor analysis. Einstein equations, Schwarzschild solution, geodesics, gravitational collapse, black holes. Geometrodynamics, superspace quantization of Einstein equations. Cosmology: cosmological principle, Mach's principle, Robertson–Walder metric, mix master universe.

Prerequisite: See above
Co-requisite: See above

PHY 411 **Classical Physics of Continua** 2L

Analysis of deformation of continuous medium. Stress tensor. Constitutive equations. Viscosity. Viscoelasticity. Wave motion in continuous media. Viscous hydrodynamics. Stability theory. Introduction to theories of turbulence.

Reference: Prager, *Introduction to the Mechanics of Continua*
Prerequisite: See above
Co-requisite: See above

PHY 412 **Physics of the Earth** 2L

Radioactivity and age of rocks, tectonics, glaciology, seismology and internal constitution of the Earth, gravity and the figure of the Earth, temperature and thermal history, geomagnetism and physics of the upper atmosphere, mechanical properties of the Earth's interior.

Reference: Coulomb & Jŏubert, *Physical Constitutions of the Earth.*
Prerequisite: See above
Co-requisite: See above

PHY 413 **Theory and Application of Geophysical Methods** 2L

A course on the mathematical theory of seismic, magnetic electrical and gravitational methods in pure and applied geophysics.

Reference: Grant and West, *Interpretation Theory in Applied Geophysics*
Prerequisite: See above
Co-requisite: See above

PHY 414 **Atmospheric Physics** 2L

Meteorological measurements, radiation, atmospheric statics and conditions for equilibrium, atmospheric thermodynamics, equations of motion, synoptic charts, the general circulations, condensations, condensation physics, atmospheric electricity. Wind structure near the ground evaporation, the stratosphere.

Reference: Haltiner and Martin, *Dynamic and Physical Meteorology.*
Prerequisite: See above
Co-requisite: See above

PHY 415S **Cellular Biophysics** 2L

The emphasis will be on the application of principles from physics, chemistry and genetics to quantitative studies in cell biology. Selected areas in biophysics such as cellular differentiation, the regulation of macromolecular biosynthesis, and the application of biophysical methods to problems in medicine, will be discussed in detail.

Reference: Watson, *Molecular Biology of the Gene.*
Prerequisite: See above
Co-requisite: See above

PHY 416 **Plasmadynamics** (Given by Institute for Aerospace Studies) 2L
Electromagnetic wave propagation, plasma equations of motion and conduction, magnetohydrodynamic approximation, tensor conductivity, Alfven, magnetoacoustic and magnetohydrodynamic shock waves, simple flow problems in magnetogasdynamics, applications to propulsion and power generation.
References: Sutton & Sherman, *Engineering Magnetohydrodynamics,* Hughes & Young, *The Electromagnetogasdynamics of Fluids,* Cambel, *Magnetofluidmechanics.*
Prerequisite: See above
Co-requisite: See above

PHY 420Y **Geophysics Laboratory II** 3P
A laboratory concerned with mathematical and computational techniques.
Prerequisite: See above
Co-requisite: See above

PHY 421Y **Geophysics Laboratory III** 3P
Project laboratory.
Prerequisite: See above
Co-requisite: See above

PHY 430 **Introduction to Research in Physics** 3P
An experimental or theoretical 'research' problem under the supervision of a staff member. All acceptable problems must meet general standards set by a Committee of the Department.
Prerequisite: See above
Co-requisite: See above

PHY 431 **Supervised Readings** Arranged
A program of individual study chosen by the student with the advice of, and carried out under the direction of a staff member. All acceptable programs must meet general standards set by a Commitee of the Department.
Prerequisite: See above
Co-requisite: See above

PHY 432 **Group Seminar** Arranged
The students registered in this course will devise and carry out a seminar course under the direction of a group of staff members. This course will only be given if at least eight students are interested.
Prerequisite: See above
Co-requisite: See above

PHY 433 **Approved Graduate Course** Arranged
Any physics course listed in the graduate calendar which is not also listed as an Arts and Science course, Must be approved by the Department.
Prerequisite: See above
Co-requisite: See above

PHYSIOLOGY

See "Medicine"

POLISH

See "Slavic Languages and Literatures"

POLITICAL ECONOMY

COMMERCE

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

COM 100 **Financial Accounting** 2L

Basic theory and concepts which underlie the preparation of financial statements; development of double entry theory and practice; the accounting cycle from the recording of transactions in double entry form to the year–end entries and the preparation of financial statements; problems of measuring income.

COM 101 **Industry and Trade** 2L

A general introduction to the world of commerce, finance, industry and trade is the objective in this course. There are examination and analysis of our basic economic structure and institutions. Attention is drawn to current developments, and students are encouraged to establish their own special areas of interest.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

COM 220 **Management Accounting** 2L

A comparison and evaluation of shareholder accounting and management accounting. Emphasis is placed on examination in depth of controllership techniques–profit planning, standard costs, flexible budgets, cost-volume-profit relationships, direct costing, relevant costing and capital budgeting. A survey of selected management science techniques is also included. Through case discussions, the interrelationships between information and control systems, managerial style and human behaviour are established.

Prerequisite: COM 100 (or †COM 102)

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

Note: The following courses are also open to Second Year students at the discretion of the instructor if space is available and pre- and co-requisites are satisfied.

COM 300 **The Legal Environment of Business** 2L

The course has two main purposes: to develop an approach to reaching decisions objectively, and to examine how the law, as an institution, accommodates business convenience and social policy. In addition, the course examines the nature of legal devices that are commonly encountered in the operation of a business. To a large degree the lecture periods take the form of class discussion of cases and of topical matters related to business law. In the event that space is inadequate, priority will be given to Third Year students in Commerce & Finance. The course is also open to Second Year students at the discretion of the instructor if space is available and pre- and co-requisites are satisfied.

Prerequisite: ECO 100/102 & COM 101

Co-requisite: COM 220

COM 320 **Problems in Accounting** 2L

An extension of prior accounting courses, emphasizing problem areas in financial accounting such as: allocation of income taxes; statements from incomplete records; inventory pricing; accounting for fixed assets including revaluations; purchase of going concerns including valuation of goodwill; accounting for investments, share capital and surplus items, stock rights and options; corporate reorganizations and consolidations; partnership problems.

Prerequisite: COM 220

Note: The following courses are only open to Third-Year students at the discretion of the instructor and if space is available and pre- and co-requisites are satisfied.

COM 400 **Marketing** 2L

The major purpose of this course is to expose the student to current research being carried out in Marketing. While all topic areas mentioned in the outline will be discussed, the area of consumer behaviour is of primary interest. The course takes the form of lectures for the first term; in the second term students will be expected to give class presentations on selected topics, followed by class discussion.

Prerequisite: COM 220 & ECO 202

Co-requisite: ECO 202 on petition

COM 401 **Principles of Administration** 2L

Examination of the essential processes of management or administration is the purpose of this course. These processes include organization, planning, leadership, and control; each of them is an integral part of the direction of every enterprise. There is study of current administrative practices and problems. Students are encouraged to identify and explore their own special areas of interest.

Prerequisite; COM 220 & ECO 202

Co-requisite: ECO 202 on petition

COM 422 **Analysis of Production Systems** 2L

This course deals with systems analysis and operations research for decision–making. Assigned problems cover such techniques as breakeven cost analysis, return on investment evaluation, plant layout and process balancing, linear programming, critical path planning, adaptive forecasting, statistical quality control, queueing theory, inventory control and system simulation models.

Prerequisite: COM 220 & ECO 202

Co-requisite: ECO 202 on petition

COM 424 **Investments: Principles and Planning** 2L

A consideration of the principles and risks which underlie the various investment media such as stocks, bonds, life insurance, real estate, mortgages and mutual funds. The sources of financial information will be examined critically although security analysis, as such, is not an objective of the course.

Prerequisite: COM 220

Co-requisite: ECO 202

COM 426 **Introduction to Accounting and Finance** 2L

This is an appreciation course designed to provide an understanding of the accounting and financial implications of such financial statements as are regularly published in the annual reports of corporations to their shareholders. It is intended for students concentrating in Economics or Political Science. It is not available to students in Commerce and Finance.

Prerequisite: ECO 202/POL 220

COURSES OPEN ONLY TO FOURTH-YEAR STUDENTS

COM 420 **Accounting Literature and Research** 2L

This course will take the form of a seminar for the critical discussion of research bulletins and monographs of the leading accounting bodies in Canada, the United States, and Britain, of articles in current issues of accounting journals, and of classic articles in books of readings. Its purpose is to provide a review of contemporary and controversial issues in accounting theory.

Prerequisite: COM 220 & ECO 202

COM 421 **Corporation Finance** 1L,1T

The course attempts to explain the financial environment within which companies must operate, and to develop the main principles of financial management. It also examines the social and legal significance of the corporation, as one of the dominant institutions of modern society. The instructor intends for at least part of the year to conduct one of the two hours each week as a tutorial group for discussion of cases in finance and of topical developments in Canadian finance. Available only to Fourth Year students.

Prerequisite: COM 220 & ECO 202

COM 423 **Canadian Business Taxation** 2L

The course is basically designed to provide Commerce & Finance students with an introduction to both the technical provisions and broad policy issues involved in taxation of business enterprises in Canada. The emphasis in the course is therefore of a dual nature, including both a development of an understanding of technical income tax provisions and a review of major policy issues.

Prerequisite: COM 220 & ECO 202

COM 425 **Managerial Economics** (Not offered 1970-71)

Note: The following courses are also open to Third-Year students at the discretion of the instructor if space is available and pre- and co-requisites are satisfied.

ECONOMICS

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

ECO 100 **Introduction to Economics** 3L

An introductory analysis of contemporary economic institutions and problems: the theory of production and employment; the role of money and the banking system; governmental monetary and fiscal policy; price determination and the role of competition; foreign exchange rates and international trade and finance; and comparative economic systems.

(May not be combined with ECO 102 in any degree programme.)

ECO 101 **European Economic History** 3L

The making of the modern European economy from the Middle Ages to the 20th century, including discussion of demography, agriculture, industry, technology, commerce, labour, money and banking, and their interconnection.

ECO 102 **Introduction to Economics** 3L

An introductory analysis of contemporary economic institutions and problems; the theory of production and employment; the role of money and the banking system; governmental monetary and fiscal policy; price determination and the role of competition; foreign exchange rates and international trade and finance; and comparative economic systems.

(May not be combined with ECO 100 in any degree programme.)

Co-requisite: One of COM 100, 101, MAT 134

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

Note: The following courses are also open to First Year students at the discretion of the instructor if space is available and pre- and co-requisites are satisfied.

ECO 200 **Microeconomic Theory** 2L

A course in the microeconomic theory of pricing. It deals with the determination of prices through the interaction of the basic economic units, the household as consumer and the business firm as producer. Its concern is with the role of the pricing system as the mechanism by which social and individual decisions are made in a capitalist economy.

(May not be combined with ECO 241 in any degree programme.)

Prerequisite: ECO 100

ECO 202 **Macroeconomic Theory, Money, Banking and National Income** 2L,1T

The subject matter of ECO 202 may be subdivided into the following major divisions; macroeconomics, monetary economics, economic stabilization, capital markets and international monetary economics. There is detailed discussion of the theory of output, employment and the price level; of techniques for achieving economic stability; of central banking and Canadian financial institutions and markets; and of foreign exchange markets.

(May not be combined with ECO 204F/205S/250F in any degree programme.)

Prerequisite: ECO 100/200

ECO 204F **Macroeconomic Theory** 2L,1T

This course concentrates on the theory of national income in closed and open economies. The course emphasizes the logical structure of macroeconomic models and develops the theory of determination of output prices and interest rates.

(May not be combined with ECO 202/240F in any degree programme.)

Prerequisite: None. (ECO 100 is strongly recommended as preparation.)

ECO 205S **Macroeconomic Policy** 2L,1T

This course is a continuation of ECO 204F. It turns to the problems of public policy in seeking to influence or control the level of national income and the price level.

(May not be combined with ECO 202/240F in any degree programme.)

Prerequisite: ECO 204F

ECO 220 **Quantitative Methods in Economics** 3L,1T

An introduction to the use of statistical analysis, including such topics as elementary probability theory, sampling distributions, tests of hypotheses, estimation and mul-

tiple regression analysis. Emphasis is placed on applications in economic and business problems. Elementary calculus and matrix algebra are used. This course is an alternative to STA 242, and only one of the two may be taken for credit.
(May not be combined with GGR 270, GLG 221Y, STA 232, STA 242, STA 252, POL 206 (PSY 200F + PSY 201S), SOC 201 in any degree programme.)
Prerequisite: MAT 130/134

ECO 221 **North American Economic History** 2L,1T
This course deals with economic growth and institutional change in the U.S. and Canada to 1935. The emphasis is upon the application of microeconomic and monetary theory towards an explanation of historical change. A staples approach is taken to the study of Canadian economic history. The cod fisheries and the fur trade are examined for the early period in relation to the economic and political events to which they gave rise. The National Policy is then examined in regard to the creation of a transcontinental economy after Confederation.
Prerequisite: ECO 100

ECO 222 **Computing for Social and Management Sciences** 2L,½T
This course provides an introduction to computing for students of the social sciences. Its purposes are to introduce digital computer organization and operations; to develop strong programming capability with particular emphasis on problem specification, algorithm formulation, and programme practice with the FORTRAN-IV language on the IBM 7094 II computer, and to introduce the use of digital computer models to analyze problems of interest to social scientists.
(May not be combined with CSC 238F in any degree programme.)
Prerequisite: MAT 134

ECO 223 **Economics and its Applications** (Not offered 1970–71)
This course will expand on the theoretical concepts developed in the principles course (ECO 100). The focus will be on the application of the theoretical concepts to selected problems. Students will be introduced to the statistical data available in Canada.
Prerequisite: ECO 100

ECO 227 **The Economy of the U.S.S.R.** (Not offered 1970–71)
Present–day economic organization in the U.S.S.R.; techniques and problems in Soviet central planning; foreign trade; pricing techniques and problems; standard of living; measurements of economic performance; informal comparisons with economic arrangements in Western Europe and North America. Not a course in Marxian economics or in Russian economic history.
Prerequisite: ECO 100

ECO 240F **Mathematical Approach to Macroeconomic Theory** 2L
The theory of national income and price level determination in closed and open economies, including problems of monetary economics, stabilization policy and international economic relations. This course is intended for students with considerable interest and competence in mathematics, and substantial mathematical maturity is assumed. ECO 100 is strongly recommended as preparation.
(May not be combined with ECO 202/204F/205S in any degree programme.)
Prerequisite: MAT 134
Co-requisites: MAT 225 & 234

ECO 241S **Mathematical Approach to Microeconomic Theory** 2L
The theory of the consumer, the firm, and of general equilibrium of multiple markets; the role of prices as an allocative mechanism. As with ECO 240, substantial mathematical maturity is assumed of the student.
(May not be combined with ECO 200 in any degree programme.)
Prerequisite: MAT 134 (ECO 100 is strongly recommended as preparation.)
Co-requisites: MAT 225 & 234

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

Note: The following courses are also open to Second-Year students at the discretion of the instructor if space is available and pre- and co-requisites are satisfied.

ECO 320 **Political Economy of Development: Studies in Comparative Economic History** 2L
The approach rests on utilizing past and recent experience in development in order to examine decision–making under uncertainty in various situations, the response to uncertainty, and the patterns that emerge from the interaction uncertainties encounter and the responses to them. It should be emphasized that this approach is exploratory, and that there is sufficient latitude for the student to concentrate on aspects and areas of most interest to him.
Prerequisite: ECO 202 or equivalent

ECO 322 **History of Economic Thought** 2L
After a brief summary account of scholastic and mercantilist economics, the lectures will trace in some detail the development of analytical economics from the eighteenth century with special emphasis upon the work of the Physiocrats; Adam Smith; the British Classical School (particularly T.R. Malthus, David Ricardo, and J.S. Mill); the "marginalists" (particularly W.S. Jevons, C. Menger and L. Waltas) and Marx. Later developments will be examined if time permits. A number of methodological issues are raised, particularly the relationship between economic events and economic theory, and the question of "bias" in economics.
Prerequisite: ECO 200 & 202 (or equivalent)

ECO 323 **Industrial Organization and Public Policy** 2L
There are many aspects of government regulations which affect corporations. The course attempts to rigorously determine what aspects should be regulated and the optimal form of regulation. These may be far different from real world regulation. The course calls upon rigorous analytical micro-theoretic discussions.
Prerequisite: ECO 200

ECO 324 **Economic Development** 2L
This course is concerned with the economic and social development of the world's underdeveloped countries. It deals with significant characteristics of economic underdevelopment and features of stagnation; and it covers important problems of economic development, including questions of population, capital formation, education, public and private finance, and foreign trade, investment and aid.
Prerequisite: ECO 200 & 202 (or equivalent)

ECO 325F **Advanced Economic Theory – Macro** 2L,½T
To develop analytical skills in constructing and solving macroeconomic models for

handling specific problems. For this purpose weekly problems will be assigned and discussed in the tutorial sessions. The problems and solutions will be based on realistic current policy questions.
(May not be combined with ECO 332 in any degree programme.)
Prerequisite: ECO 200

ECO 326S **Advanced Economic Theory – Micro** 2L,1T
The course focuses on theories and techniques of decision–making by firms and households. It examines the problem of measuring economic welfare, and the merits and shortcomings of the market mechanism in promoting it. Though a basic element of the course is the precise analysis of quantitative relationships, no knowledge of calculus is is assumed.
(may not be combined with ECO 332 in any degree programme.)
Prerequisite: ECO 200 (or equivalent)

ECO 327 **Econometrics** 2L
Economics 327 is primarily concerned with developing statistical techniques that can be used in testing economic theory. Special statistical problems arise in estimating econonomic relationships and the implications and treatment of these problems are the subject matter of Economics 327.
Prerequisite: MAT 234/STA 232

ECO 328 **International Economics** 2L
The purpose of the course is to acquaint students with the operation of the international economy and the economic interdependence among nations, both in terms of international monetary relationships and inter-actions and in terms of trade in real commodities. The course deals with these problems on theoretical, institutional, and descriptive levels.
Prerequisite: ECO 200 and ECO 202 (or equivalent)

ECO 329 **Business Cycles and Economic Growth** 2L
A course in dynamic macroeconomics applied to the theory of business cycles and economic growth. The long-run effects of capital accumulation, population change, technical progress and institutional change are examined. Interactions among investment, consumption, innovational activity, monetary factors and foreign trade producing business cycles are analyzed; and policy implications considered.
Prerequisite: ECO 202 (or equivalent)

ECO 330 **Economy of the U.S.S.R.** 2L
The course begins with a history of the Soviet economy. It then analyzes the main economic institutions and policy instruments (planning, industrial organization, fiscal and monetary policy, price policy) and surveys some important economic and functional sectors such as agriculture, industry, transportation, labour, and consumption. Finally, we study the major attempts to measure Soviet performance and consider the important problems facing the economy today.
Prerequisite: ECO 200 & ECO 202 (or equivalent)

ECO 331 **Computer Methods in Economic Research** (Not offered 1970–71)

ECO 332 **Advanced Mathematical Economic Theory** 2L

Dynamic theories of the consumer, the firm, and market adjustment processes. Synthesis of these elements into models of economic growth and of macroeconomic planning. As with Economics 240F and 241S, this course is intended for students with considerable interest and competence in mathematics.

(May not be combined with ECO 325F, ECO 326S, ECO 343 in any degree programme.)

Prerequisite: ECO 240F & 241S (or equivalent), MAT 225 & 234

Co-requisite: MAT 314F

ECO 333F **Urban and Regional Economics I** 2L

Micro-economic theory is reviewed briefly with emphasis on its application to urban policies. The role of the public sector at the local level is analyzed, investigating the impact of local decisions on resource allocation and the redistribution of income among classes. Specific topics covered are: demand and supply of urban government services; local finance; metropolitan governmental structure; provincial–municipal finance and methods of program evaluation.

Prerequisite: ECO 200

ECO 334S **Urban and Regional Economics II** 2L

Using the framework established in Economics 333, the following topics are analyzed: pollution; urban space: planning and zoning; housing and urban renewal; transportation and poverty and income maintenance.

Prerequisite: ECO 200

ECO 336 **Public Sector Economics** 2L

Economics of the public sector, embracing about a third of all economic activity. A "macro-historical" view in financial and real terms; public functions and growth of spending; tax devices: their incidence and other results stressing distortions, technology and economic development; public debt and its interrelations with monetary system and price level. Fiscal efforts to influence the size and personal and regional distribution of a national income.

Prerequisite: ECO 202 (or equivalent)

Co-requisite: ECO 202 (or equivalent)

ECO 338 **Economic History of Europe** 2L,1T

The economic development of Europe from the Middle Ages to the 20th Century, with particular attention to the causes and consequences of growth in agriculture, commerce and industry.

(May not be combined with ECO 101 in any degree programme.)

Prerequisite: One course in any of Economics, European History, Sociology, Anthropology, Human or Economic Geography

ECO 339F **Labour Economics** 2L,½T

The course is intended primarily to introduce students to some of the more important issues in the study of labour economics, and to provide a descriptive background for students who will be pursuing further study in this field. The course deals only with selected topics and with the major aspects of these topics. Students therefore are expected to do considerable reading in order to contribute to and benefit from the discussions in both the lectures and the tutorials.

Prerequisite: ECO 100/102

ECO 340S **The Economics of Manpower** 2L
This course applies the tools of labour economics to selected problem areas including education and training; mobility; unemployment; wages and prices; the security of employment; and poverty. The purpose of the course is to examine these problem areas in terms of their relation to the operation of labour markets.
Prerequisite: ECO 339F

ECO 341 **The Formation of Economic Policy** 2L
Focus is on economic policy as an institution, its role in various social systems and the patterns of its formation. Topics include: market and plan; normative economics; principles and designs of economic policy; epistemological problems involved in the use of models; and the logic of decision making.
Prerequisite: ECO 200 & 202 or permission of the instructor

ECO 342 **Comparative Industrialization** 2L
This course will examine the appearance and growth of the contemporary industrial economy in Europe (Britain, France, Germany, Italy, and Russia,) Japan and North America. Interprets the historical record with the aid of economic analysis and other appropriate tools. Deals with events in the period 1750-1939 but does not cover all of this period for any of the countries studied: concentrates on the years in which industrialization was most rapid or most interesting.
Prerequisite: ECO 100 or 102 and at least one 200-level course in Economics or History.

ECO 343 **Economic Theory** 2L
A course in advanced micro and macro theory with somewhat more emphasis on the application of mathematical techniques than Economics 325F and Economics 326S. (May not be combined with ECO 332/240F/241S in any degree programme.)
Prerequisite: ECO 200 & 202 (or 204F), MAT 234

ECO 344 **Industrial Relations** 2L
This course will cover the following areas: labour movement, its history, structure and philosophy; labour regulations with emphasis on Canadian law; collective bargaining – nature of the negotiation process, theories of bargaining, the role of conflict, third party intervention, emergency disputes, grievance procedures; the issues in collective bargaining – terms and conditions of employment; collective bargaining and economic formulation.

ECO 345 **Economic Development – Latin American Cases** 2L
Prerequisite: ECO 202 (or equivalent)

COURSES OPEN TO FOURTH-YEAR STUDENTS

ECO 420 **Reading Course in an Approved Subject** Arranged
Open only when a faculty member is willing and available to supervise. Students must obtain the approval of the Supervisor of Undergraduate Studies, before enrolling in this course.

ECO 421F **Workshop in a Particular Field** Arranged

ECO 422S **Workshop in a Particular Field** Arranged

ECO 423 **Thesis** Arranged
Open only when a faculty member is willing and available to supervise. In some cases, the Department might agree to give this the weight of two courses. Students must obtain the approval of the Supervisor of Undergraduate Studies before enrolling in this course.

POLITICAL SCIENCE

RECOMMENDED INTRODUCTORY COURSES

POL 100 **Introduction to Canadian Politics** 2L,½T
A study of the political process in Canada, including Canadian political culture, the formation of public opinion, political behaviour, political parties, the constitution, federalism, French Canada, federal–provincial financial relations, and the structure and functioning of political institution, such as the cabinet, parliament, the judiciary, and the public service.

POL 101 **Introduction to Political Science** 2L
An examination of political practices, concepts, and institutions including primitive society, the Greek polis and contemporary North American society. Among the topics examined are Greek political philosophy, English constitutional development, Canadian and American political practices.

COURSES OPEN TO SECOND-AND HIGHER-YEAR STUDENTS

POL 200 **Political Theory** 2L,1T
The development of political thought from the dialogues of Plato to the controversies surrounding the French revolution. Among the theorists examined are Aristotle, Machiavelli, Hobbes, Locke and Rousseau.

POL 201 **Political Behaviour** 2L
An introductory survey of the contribution of behavioural political studies to explaining the making of public policy. Personal, social and cultural factors affecting the behaviour of citizens, interest-group leaders, and policy-makers are examined. Characteristic relationships within the political system and the results in terms of policies are considered.

POL 202 **Political Economy and Public Policy** 2L,1T
A course in elementary economics would be a useful prerequisite to this course, but is not crucial if the student undertakes to catch up on his own. This course is concerned with current public policy problems where economic and political factors interact. The areas that will be examined include resouce allocation in the public sector, conservation policy, cost-benefit analysis, foreign investment, development economics and the anti-poverty programme.
Prerequisite: None (but ECO 100 is strongly recommended.)

POL 203 **Politics and Government of the United States** 2L,½T

During the first term, this course concentrates on the evolution of the American constitution with particular reference to individual rights, federalism and governmental powers. In the second term, the course deals with the actual operation of government through the workings of politics and administration; it covers executive–legislative relations, parties, pressure groups, the bureaucracy, and foreign affairs.

Note: The following courses are also open to First-Year students at the discretion of the instructor if space is available and pre- and co-requisites are satisfied.

POL 204 **Politics and Government of the U.S.S.R.** 2L

An introduction to the domestic politics and foreign relations of the U.S.S.R., with emphasis on the post-Stalin era. The initial phase will be taken up with the political history, political culture, and institutions of the U.S.S.R., and with a consideration of alternate approaches to the study of Soviet politics. Detailed attention will then be given to the Soviet policy process in both domestic and external affairs. Although the stress will be on internal politics, roughly a quarter of the course will be devoted to external affairs and the impact of external events and foreign policy considerations on the Soviet domestic scene will be emphasized throughout.

POL 205 **Politics and Government of the United Kingdom** 2L

The first part of the course will consist of a survey of the British political system. The second part will consist of seminars on selected topics. Some of the topics will be, the reform of the Civil Service, the role of trade unions in the political system, the revisionism controversy in the labour party, the nationalization issue, the Common Market controversy, Britain and Rhodesia. Students are encouraged to read S.H. Beer, *British Politics in the Collectivist Age.*

POL 206 **Quantitative Methods for Political Science** (Not offered 1970-71)

This course will treat the main topics in statistics relevant to quantitative work in Political Science: problems of measurement and scaling, empirical frequency distributions, measure of central tendency and dispersion, regression, correlation, probability and theoretical distributions, tests of hypotheses, estimation, analysis of variance. Students will be expected to work examples and to report on published studies using the techniques under discussion. The course will not be one of research methodology, treating for example, topics such as questionnaire construction, but if possible, groups of students will be encouraged to undertake projects of a limited extent that may require them to gain some knowledge of those subjects.

Reference: V. O. Key, *A Primer of Statistics for Political Scientists.*

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

Note: The following courses are also open to Second-Year students at the discretion of the instructor if space is available and pre- and co-requisites are satisfied.

POL 300 **Comparative Government** 2L,½T

The course will focus on the problems of defining "responsive government", utilizing the Soviet and American political systems as the primary source of illustrative materials.

The tutorial sessions will centre on a class research project which examines some aspect of the political system of Canada or Toronto in an attempt to explore in more concrete detail the theoretical generalizations discussed in lectures and readings.

POL 301 **Politics of Australia, New Zealand, South Africa and the West Indies** 2L
This is a comparitive course in the political ideas and institutions of certain present or past members of the Commonwealth. It examines how Parliamentary forms and practices have been modified by special circumstances of history, geography, economics and temperament. Emphasis is placed on problems of federalism, party politics, social security, civil liberties, and race relations.
Prerequisite: At least one university course in Canadian or British government.

POL 302 **Politics and Government of Western Europe** 2L

JMC 300 **Modern China in Revolution** 2L
An inter-disciplinary lecture course that traces the history, social context, and political theory of revolutionary trends in China from the Reform Movement of the 1890's to the Great Proletarian Cultural Revolution of the late 1960's.

POL 304 **Politics of the Third World** 2L
The course places Latin American and African politics in the context of the relationship of these two continents with the industrial and imperial powers of Europe and North America. The origins and problems of underdevelopment will be viewed from the perspective of continental and sub-continental regions as well as from the perspective of existing nation–states. Underdevelopment will be seen as an experience and not only as a phenomenon of social structure or political system. Heed will be given to the perceptions and analysis of Latin Americans and Africans.

POL 305 **Politics and Government of Latin America** 2L

POL 306 **Introduction to International Relations** (Not offered 1970-71) 2L
This course involves an examination of the interactions between states and the factors (both international and national) that determine state behaviour. Focusing on conflict and its causes, the course looks at the institutions, policies and norms that states have devised to erect the structures of peace.

POL 307 **Political Analysis** 2L
This course charts the development of pluralist political theory and its critics from the writing of the Italian elite theorist Mosca down to the present. The course considers community power studies, and studies of the national power structure from the perspective of the pluralist theorists like Lasswell and Dahl and from theorists who take a profoundly different view such as C. Wright Mills and Herbert Marcuse.

POL 308 **Urban Politics** 2L
This is a comparitive course dealing with Urban Politics in Canada, Britain and the United States. It will deal with governmental structure, political issues, and the political process in urban areas. A major element of the course will be a research paper on some aspect of politics in the metropolitan Toronto area. Students are encouraged to read H. Kaplan, *Regional City* and E.C. Banfield & J.Q. Wilson, *City Politics* as an introduction to the course. Limited enrolment.

JAP 343 **Introduction to African Politics and Government** 2L
The first part of this course focuses on Southern Africa; by asking questions relevant to modernization, colonial studies of "tribes" will be analyzed, and emerging categories of social interaction identified. The focus in the second part will shift to politics in East Africa; the topics of bureaucracy, political leadership, and strategies of development will be discussed.

POL 310 **Politics and Government of the Middle East** (Not offered 1970-71)

POL 320 **Modern Political Thought** 2L,½T
This course examines the development of political thought in the period beginning after the French Revolution and continuing through the nineteenth century, with special attention to the implications of this development for political thought in the twentieth century. Both democratic and anti-democratic tendencies are considered.
Prerequisite: POL 100/101/200

POL 321 **Systems of Political Science** (Not offered 1970-71)

POL 322 **Introduction to Public Administration** 2L
This course is intended to introduce students to the literature of public administration and to some of the main issues of the present and recent past in Canada (and to a limited extent in Britain and other countries). In other countries primary emphasis will be on policies or features that have influence Canadian practice.
Prerequisite: POL 100

POL 323 **Workshop in Canadian Government** 2L
For the 1970–71 session, members of the Workshop will study the Federal House of Commons and the Ontario Legislative Assembly through individual research projects. It is assumed that all students in the course have already engaged in a thorough study of Canadian Government. Enrolment is restricted to 10 persons and anyone wishing to be admitted must consult the instructor.
Prerequisite: POL 100

POL 324 **Comparative Cummunism** 2L
Prerequisite: POL 204 (or equivalent)

POL 325 **Topics in United States Government and Politics** 2L
A survey of American political and social thinking, past and present, and the role it has played in determining the shape and uses of American government. The central concern is the function of politics in a liberal republic.
Prerequisite: POL 203

POL 326 **International Relations** 2L
Prerequisite: POL 100/101

POL 327 **Comparative Foreign Policy** 2L

POL 328 **International Organization** 2L
This is a weekly two–hour seminar aimed at an analysis of the development, structures and functions of international organizations. The emphasis is on the process of inter-

national organization as well as the specific institutions evolved for various purposes. Most attention is given to the two universal, political organizations, the United Nations and its forerunner, the League of Nations.

POL 329 **Marxism–Leninism** 2L
A study of the major texts of Marx, Engels and Lenin. Greater emphasis will be placed on theoretical rather than on tactical problems, on Marxist philosophy than on its practical implementation in the contemporary world.
Prerequisite: POL 200 (or equivalent)

POL 330 **Politics and Psychology** 2L
This course considers theories which attempt to explain political behaviour, with particular attention to problems of intergroup conflict and hostility. The skill it seeks to develop is that of thinking scientifically about the reasons why people behave as they do in political situations.
Prerequisite: POL 201

COURSES OPEN TO FOURTH–YEAR STUDENTS

POL 400 **Twentieth Century Political Thought** 2L

POL 401 **Ancient and Medieval Political Thought** 2L
An advanced study of such works as Plato, *Laws;* Aristotle, *Nichomachean Ethics;* Cicero, *On the Commonwealth,* and selected writings of St. Augustine, St. Thomas Aquinas and Marsilius of Padua. In addition there will be analysis of such concepts as the city state, natural law and the relationship between church and state in the Middle Ages. Students must obtain the instructor's permission before enrolling in this course.
Prerequisite: POL 200

POL 402 **European Theories of the State** (Not offered 1970-71)

POL 403 **The Marxian Revolutionary Model: China** (Not offered 1970-71)

POL 404 **Comparative Public Law** 2L

POL 405 **The Courts and the Constitution** (Not offered 1970-71)

POL 406 **Comparative Politics of Development and Modernization** (Not offered 1970-71)

POL 407 **Political and Economic Aspects of Economic Growth in Developing Societies** (Not offered 1970-71)

POL 408 **Science and Government** 2L
This course will treat problems arising from the subvention of research and development by governments and will also consider the political impact of developments in science and technology. Attention will be directed mainly at American experience, but comparisons will also be made with the experience of other countries, including Canada.

POL 409 **Public Administration** 2L
This course deals with a selection of the major topics in public administration: organization, finance, personnel and controls over the administration. The stress is on Canadian public administration at all three levels of government but comparative material from Britain, United States and other countries will be introduced where relevant.

POL 410 **Political Economy of the Welfare State** 2L
A course dealing with the development of the welfare state in the English–speaking world in the 20th Century. Emphasis is placed on the theory and practice of state regulation of industries and national economies. Consideration is given to the political implications of modern economic philosophy in the writings of K. Polanyi, Schumpeter, Keynes, Hayek, Glabraith, Friedman, Crosland, and others.

POL 411 **Intergovernmental Relations and Public Policy** (Not offered 1970-71)

POL 412 **The Canadian Political System** 2L
This course focuses on the making of public policy and the political process in Canada. It includes an analysis of pressure groups, parties, public opinion, electoral behaviour, mass media, duality of Canadian culture, regionalism and the federal system.

POL 413 **Provincial and Local Government** 2L

POL 414 **Comparative Politics of Communist East Europe** 2L

POL 415 **International Politics** 2L

POL 416 **International Law** 2L

POL 417 **The Third World in International Politics** 2L

POL 418 **Workshop in Political Science** 2L

POL 419 **African Government and Politics** 2L

JMC 400 **Nationalism and Social Change in Contemporary China** 2L
An inter-disciplinary seminar that examines various aspects of social change in China since 1900. The second term will deal exclusively with the period since 1949. Themes to be developed include nationalism, culturalism, modernization, urban and rural development, authoritarianism, and utopianism.

POL 421 **Topics in Modern Political Thought: The Education of Political Man – Plato and Rousseau** 2L

POL 422 **Dynamics of Soviet Politics** 2L
This course is designed to introduce the student to several western approaches to Soviet politics and to some of the available research techniques. English language sources and translations of Soviet sources will be used in a manner which will also enable the student to acquaint himself with various aspects of the Soviet political process.

POL 440 **Thesis** Arranged

POL 441 **A Reading Course in Political Science** Arranged

PORTUGESE

See "Italian and Hispanic Studies"

PSYCHOLOGY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

PSY 100 **Introductory Psychology** 3L
A full year course strongly recommended for all other Psychology courses. Instructors in all subsequent courses will assume the student has the background knowledge provided by PSY 100. The course surveys various areas of contemporary psychology, its methods, problems, and current status.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

PSY 200F **Statistics and Research Methods** 3L
This course deals with descriptive statistics and basic statistical inference. Students will learn techniques to describe data graphically and numerically and to test statistical hypotheses. No mathematical sophistication beyond Grade XII is necessary, but the the student who feels rusty should review.
Suggested prior course: PSY 100

PSY 201S **Statistics and Research Methods** 3L
A continuation of PSY 200F. This course will focus on the conceptual foundation underlying inferential statistics (probability) and statistical techniques (analysis of variance, regression analysis), and computer applications.
(May not be combined with GGR 270, GLG 221Y, STA 232, STA 242, STA 252, ECO 220, POL 206, SOC 201 in any degree programme.)
Prerequisite: Knowledge of basic statistics (PSY 200F) is assumed.

PSY 202F **Developmental Psychology: Social and Personality Development** 3L
Social attachment, aggression, morality, identification, achievement.
Suggested prior course: PSY 100

PSY 202S **Developmental Psychology: Social and Personality Development** 3L
The same as PSY 202F.
Suggested prior course: PSY 100

PSY 203F **Introduction to Social Psychology** 3L
A survey of contemporary areas of research in social psychology. Areas to be considered

include social perception, attitudes, interpersonal relations, group processes, and ethnic attitudes.
Suggested prior course: PSY 100

PSY 203S **Introduction to Social Psychology** 3L
The same as PSY 203F.
Suggested prior course: PSY 100

PSY 204F **Personality** 3L
Emphasis on empirical research, e.g. authoritarianism, need for achievement, manifest anxiety, self-concept.
Suggested prior course: PSY 100

PSY 204S **Personality** 3L
The same as PSY 204F
Suggested prior course: PSY 100

PSY 205S **Differential Psychology** 3L
Genetic and environmental bases of individual differences in intelligence and personality. Family, sex, class, and race differences.
Suggested prior course: PSY 100

PSY 206F **Introduction to Learning** 3L
This course provides a foundation to the area of conditioning and learning. It will focus on classical conditioning and instrumental learning and will be concerned with the problem of reinforcement, the phenomena of extinction, generalization, and discrimination.
Suggested prior course: PSY 100

PSY 207S **Introduction to Learning** 3L
This course will begin with a consideration of basic classical and instrumental conditioning phenomena but will go on to examine more cognitive interpretations. In the light of these considerations, a survey will be given of such more typically "human" areas as the development of speech, the acquisition and retention of verbal material, and various views on the nature of memory.
Suggested prior course: PSY 100

PSY 208S **Sensory Processes and Psychophysics** 3L
Introduction to the study of sensory processes, psychophysics, and scaling. It includes: (1) general methodological problems in the study of sensation and perception; (2) the structure and physiological functioning of some sensory systems; (3) the physical description of stimuli; (4) some basic sensory processes such as detection and discrimination and variables relevant to them.
Suggested prior course: PSY 100

PSY 209F **Introduction to Physiological Psychology** 3L
Course will emphasize the relation of physiological and neurological information to the study of behaviour. Topics covered will be elements of neurophysiology, neuroanatomy, and research methodology in physiological psychology with a view to intro-

ducing the application of knowledge in these areas to our understanding of the behaviour of organisms.
Suggested prior course: PSY 100

PSY 210Y **Individual Projects** Arranged
Laboratory work under the supervision of a staff member. Written approval of a staff member is necessary before a student may be enrolled in this course.
(May be taken in addition to PSY 212, 213, and 214.)

PSY 211F **Motivation** 3L
Introduction to theories of motivation in humans and animals.
Suggested prior course: PSY 100

PSY 212F **Individual Projects** Arranged
The same as PSY 210Y.
(May be taken in addition to PSY 210, 213, or 214.)

PSY 213S **Individual Projects** Arranged
The same as PSY 210Y.
(May be taden in addition to PSY 210, 212, or 214.)

PSY 214 **Individual Projects** Arranged
The same as PSY 210Y.
(May be taken in addition to PSY 210, 212, and 213.)

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

PSY 300F **Developmental Psychology: Comparative Behavioural Development** 3L
An examination of the development of psychological processes in the individual. The processes included in this survey will include learning, motivation, emotion, attachment and socialization and the acquisition of language. The emphasis will be on the psychological processes rather than on the species being studied.
Suggested prior course: PSY 100

PSY 301F **Developmental Psychology: Cognitive and Sensory Development** 3L
Learning, problem-solving, thinking, concept formation, with strong accent on Piaget's theory of cognitive development throughout the age span.
(Not open to students who took PSY 200 or 202 in 1968-69 or before.)
Suggested prior course: PSY 100

PSY 301S **Developmental Psychology: Cognitive and Sensory Development** 3L
The same as PSY 301F
Suggested prior course: PSY 100

PSY 302S **Social Psychology: Attitudes** 3L
Intensive study of social attitudes and opinions – their development, description and measurement, modification, and organization.
Suggested prior courses: PSY 100 & 203

PSY 303 **Social Psychology: Social Perception** (Not offered in 1970–71)
Examination in depth of the ways in which people view others and of the psychological processes underlying these views: impression formation, ingratiation and the presentation of self, cognitive consistency. Half course.
Suggested prior courses: PSY 100 & 203

PSY 304F **Social Psychology: Inter-personal Behaviour** 3L
Detailed analysis of some of the determinants and consequences of various forms of social interaction; conformity and social influence, social comparison, affiliation. (Not open to students who took PSY 204, 304, 340 or 360 in 1968-69 or before.)

PSY 304S **Social Psychology: Inter-personal Behaviour** 3L
The same as PSY 304F.
(Not open to students who took PSY 204, 304, 340 or 360 in 1968-69 or before.)
Suggested prior courses: PSY 100 & 203

PSY 305F **Psychology of Language** 3L
An examination of modern psychological and linguistic theories of language behaviour and of experiments and observational studies based on these theories.
Suggested prior course: PSY 100

PSY 306S **Personality and Social Interaction** 3L
Intensive examination of selected areas of research in personality and social interaction. Discussions, papers, projects.
Suggested prior courses: PSY 100 & 204 and two half-courses in Social Psychology.

PSY 307F **Personality Assessment** 3L
Analysis of concepts and methods for the measurement of personality, including statistical analysis of reliability and validity; norms, observational methods, structured tests, interview, projective techniques, nonreactive measures. Ethical problems in assessment. NOT a course in test administration.
Suggested prior courses: PSY 100 & 204

PSY 308F **Introduction to Verbal Learning** 3L
Major problems, methods, principles, and concepts in research on verbal learning and forgetting. Lectures, demonstrations, and exercises.
Suggested prior courses: PSY 100 & 207

PSY 309S **Organization and Memory** 3L
Experimental facts and theoretical speculations concerning storage and retrieval of mnemonic information in humans. Lectures and discussions.
Suggested prior courses: PSY 100 & 207 & 308

PSY 310F **Short-term Memory** 3L
A study of the recent methodological, empirical, and theoretical advances in the field of human short-term memory.
Suggested prior courses: PSY 100 & 308

PSY 311S **Discrimination Learning** 3L
Focus is on the current status of the various theories relevant to how organisms come to respond differentially to their stimulating environment. Most of the empirical work examined will deal with lower organisms.
Suggested prior courses: PSY 100 & 206/207

PSY 312 **Motivation in Learning and Behaviour Theory** 3L
An examination of Bolles' "Theory of Motivation" which contends that motivational concepts can be dispensed with in behavioural explanation. Small group seminars deal with controversial questions raised but not covered by Bolles. Students give papers. Stress is laid on the extent to which student shows understanding of problems raised in seminars, take–home projects, and essay type examinations.
Suggested prior courses: PSY 100 & 206/107

PSY 313S **Conditioning and Behavioural Control** 3L
The analysis of factors controlling human and animal behaviour from the point of view of conditioning.
Suggested prior course: PSY 100

PSY 314S **Perception** 3L
The effects of contextural variables upon the interpretation of stimuli in the immediate environment with an emphasis on visual perception. Topics include space perception, contour and form perception, movement perception, brightness and colour contrast. Some consideration also of variables not in immediate stimulus situation e.g., prior experience and motivational conditions.
Suggested prior courses: PSY 100 & 208

PSY 316F **Physiological Psychology: Physiology of Learning** 3L
Role of neural and biochemical processes affecting learning.
Suggested prior courses: PSY 100 & 209

PSY 317S **Physiological Psychology: Physiology of Motivation** 3L
Psysiological bases of basic motivational variables which energize and direct the organism's responses to its environment.
Suggested prior courses: PSY 100 & 209

PSY 319S **Physiological Psychology: Physiology of Sensory–Motor Behaviour** 3L
Physiological bases of sensory–perceptual and motor behaviour. Importance of developmental processes on sensory–motor coordination.
Suggested prior courses: PSY 100 & 209

PSY 320 **Learning Laboratory** Arranged
Independent projects in the general area of learning.
Suggested prior courses: PSY 100 & 206/207

PSY 321 **Sensation and Perception Laboratory** Arranged
A series of three or four experimental projects to be conducted under supervision of the instructor. Each project will include the design of an experiment, data collection,

and a written report. Subject matter for the projects can be anything within the general area of perception and is limited only by the equipment available or the student's ingenuity in constructing or arranging such equipment.
Suggested prior courses: PSY 100 & 208

PSY 322 **Physiological Psychology Laboratory** Arranged
Independent research projects in the general area of physiological psychology. Students will work in pairs on projects of their choice.
Suggested prior courses: PSY 100 & 209

PSY 324 **Comparative Psychology: Animal Behaviour** 3L
Comparison of psychological and ethological approaches to the problems of the structure, causation, ontogeny and phylogeny of behaviour. Seminar. A full year course. (Under special circumstances the first and second parts of the course may be taken separately.)
Suggested prior courses: PSY 100 & 206, 208, 209

PSY 325F **Comparative Psychology: Biological Foundations of Behaviour** 3L
Behaviour as part of the total biological organization of the animal. Regulation of the internal environment by physiological and behavioural means; relationship between physiological and behavioural regulations; role of the hypothalamus and biological negative feedback systems. Effects of external stimuli on the internal environment and behaviour; pheromones, population density, and hormonal changes. Hypothalamic lesions and control of body weight and eating, relation of eating to intracranial self-stimulation.
Suggested prior courses: PSY 100 & 206 & 209

PSY 326F **Comparative Psychology: Man as a Vertebrate** 3L
Man's psychology compared with that of other selected vertebrate species. Preliminary considerations: psychologist's approach to animal behaviour, precautions in attempting species comparisons; biological characteristics of the species; evolutionary status. Topics for species comparisons, sample sensation, perception, motivation, learning, and cognition.
Suggested prior courses: PSY 100 & 206/207

PSY 327F **History and Systems of Psychology** 3L
Suggested prior course: PSY 100

PSY 328S **Mathematical Models** 3L
A critical evaluation of the role of mathematical methods in theory construction and an examination of their contribution in a number of substantive areas. Topics will include finite state models. Markov processes, stimulus sampling theory, signal detection theory, and their application to such areas as conditioning, short term memory, choice behaviour, psychophysics, and social interaction.
Suggested prior courses: PSY 100 & 200

PSY 329S **Computer Applications to Psychology** 3L
A lecture course on the uses and limitations of computers in psychological research with emphasis on simulation and real time computers.
Suggested prior courses: PSY 100 & 200. A knowledge of Fortran will be assumed.

PSY 330F **Abnormal Psychology** 3L
A survey of theories and research in psychopathology and psychotherapy with special emphasis on social learning theory and behaviour modification techniques.
Suggested prior course: PSY 100

PSY 330S **Abnormal Psychology** 3L
The same as PSY 330F
Suggested prior course: PSY 100

PSY 332S **Motivation** 3L
A biological approach to the problems of the causation of behaviour. Topics will include: (1) stimulus, chemical, and neural factors; (2) the problems of unitary drive, and an examination of selected drive systems; (3) interactions among drive systems; (4) the problem of reinforcement.
Suggested prior course: PSY 100 or Introductory Biology

PSY 333F **Human Motivation** 3L
A survey of different approaches to the study of human motivation. Although human applications and data from experiments involving humans will be stressed, experimental research with animals will be discussed as it is relevant to humans. Such topics as learning, punishment, anxiety, emotions, psychoanalytic theory, cognitive dissonance will be discussed.
(Not open to students who took PSY 260 in 1968-69.)
Suggested prior course: PSY 100

PSY 334 **General Experimental Psychology** Arranged
A laboratory course on the methods of psychology in the following content areas: learning and conditioning motivation, sensation and perception.
(Not open to students who took PSY 210 in 1968-69.)

PSY 336S **Thinking and Reasoning** 3L
Examination of experimental investigations, models and discursive treatments of human complex problem solving behaviour. Topics include concept learning, programmed instruction, ill-defined problems, plans, insight and creative thinking.
Suggested prior courses: PSY 100 & 200 and one other 200-series course.

PSY 337S **Communication and Cognition** 3L
Suggested prior course: PSY 100, 207, 208
Consultation with instructor is recommended.

COURSES OPEN TO FOURTH-YEAR STUDENTS

Note: Enrolments in the following courses are restricted. Third-year students who can demonstrate adequate preparation may request admission and this will be granted if space is available.

PSY 400 **Thesis** Arranged
An individual research project done under the direction of a staff member.
Suggested prior courses: PSY 200 & 201 and one of 320, 321 or 322

PSY 402S **Special Topics in Social Psychology** 2T
Examination in depth of a limited topic within social psychology. Content in any given year will depend on instructor. Students should check with instructor before enrolling.
Suggested prior courses: PSY 100 & 203 & one of 302, 303 or 304

PSY 403F **Special Topics in Developmental Psychology** 2T
Examination in depth of a limited topic within developmental psychology. Content in any given year will depend on instructor.
Prerequisite: (Students should check with instructor before enrolling.)
Suggested prior courses: PSY 100 & two of 202, 300 or 301

PSY 404S **Special Topics in Abnormal Psychology** 2T
Examination in depth of a limited topic within Abnormal Psychology. Content in any given year will depend on instructor.
Prerequisite: (Students should check with instructor before enrolling.)
Suggested prior courses: PSY 100 & 330

PSY 405F **Special Topics in Personality** 2T
Examination in depth of a limited topic within the area of personality. Content in any given year will depend on instructor.
Prerequisite: (Students should check with instructor before enrolling.)
Suggested prior courses: PSY 100 & 204 & one of 306/307

PSY 406F **Special Topics in Perception** 2T
Examination in depth of a limited topic within the area of perception. Content in any given year will depend on instructor.
Prerequisite: (Students should check with instructor before enrolling.)
Suggested prior courses: PSY 100& 208 & one of 314/321

PSY 407S **Special Topics in Physiological Psychology** 2T
Examination in depth of a limited topic in physiological psychology. Content in any given year will depend on the instructor.
Prerequisite: (Students should check with the instructor before enrolling.)
Suggested prior courses: PSY 100 & 209 & one of 316, 317 or 319

PSY 409 **Special Topics in Learning** 2T
Examination in depth of a limited topic in learning. Content will depend on instructor.
Prerequisite: (Students should check with the instructor before enrolling.)

RELIGIOUS STUDIES

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

REL 100 **Religious Traditions, East and West** 2L,1T
A study of the ideas, attitudes, practices, and contemporary situation of the Judaic, Christian, Muslim, Hindu, Buddhist, Confucian, Taoist, and Shinto faiths.

REL 110 **Religion and the Human Condition** 1L,2T
Investigations into the nature of religion and the dimensions of its impact on personal and public life. Tutorials, reading and research, including the participation of a variety of resource people, encourage concentration on student-initiated topics such as religion in the arts, in interface with social and natural sciences, philosophy and various forms of personal commitment.

REL 120 **Introduction to Contemporary Religious Thought** 1L,2T
A directed reading course in twentieth century Christian theology. The course will consist principally of reading and discusion.

EAS 116 **Buddhism** 1L,1T
An historical and doctrinal introduction to Buddhism and its various schools.

ISL 213 **An Introduction to Islamic Civilization** 2L
This course is designed to explain the essential beliefs and practices of Islam, and the development of its intellectual and mystical traditions. Emphasis is given to the Islamic contribution to world civilization in the past, and its continuing impact today.

NES 261 **Early Biblical Literature in Translation** 1L,1T
A literary and historical study of the Hebrew canonical writings down to ca. 600 B.C., including the prophetic movement.
(May not be combined with †NEH 241 in any degree programme.)

NES 262 **Classics of the Jewish Tradition in Translation** 1L,1T
A discussion course based on reading of major works of classical and medieval Judaism in translation.

REL 201 **Christianity and Christendom** 2L,1T
A lecture and reading course in the history of the doctrines and institutions of the Christian Church in its first thousand years.

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

REL 202 **Twentieth Century Christianity** 2L,1T
A study of developments in Christianity since the turn of the century, including the ecumenical movement and sectarian divisions.

REL 204 **Hinduism I** 2L,1T
Brahmanism. The Vedic Tradition: Ṛgvedasaṃhitā, Brāhmanas, Upaniṣads, Mīmāṃsā, Vedānta, Dharmaśāstra.

REL 210 **Contemporary Problems in Religion and Ethics** 2L,1T
A flexible course, the content of which is decided by students and instructors according to their choice of current issues. These might include situation ethics, Canadian poverty and racial problems, identity crises and the youth revolt, the use of drugs, new developments in faith, liturgy and personal and social awareness.

REL 211 **Communications Media and Religious Consciousness** 1L,1T,1P
The evolution of media as: (1) the "nerves and senses" of social and religious groups;

(2) determinants of the thought-forms of every theology; (3) orientations implying ideals of health and salvation. Mythic acts, clothes, cosmetics, dance, music, song, judicial procedures, academic disciplines, rhetorical styles, novels and poetry, movies, T.V., popular press, participation drama, "confrontations."

REL 220F **Ancient Religious Symbol Systems** 2L,1T
Examination of basic symbols recurring in myths and rites from the Neolithic age to the threshold of historic world religious traditions: cyclic time and cosmic circles; death and rebirth of the corn god; sky, water, earth and sex as natural manifestations of the sacred; astrology.

REL 221S **Evolution of Religious Symbols** 2L,1T
A study of selected cases of systems of religious symbols from primitive to modern from the perspective of socio-cultural evolution. Special attention will be directed toward evidence of influence either way between the religious symbol system and the other sectors of social action.

EAS 203 **Readings in Pre-Han Philosophy** 2L
Detailed study of translations from four Pre-Han philosophical traditions: Legalism (Political Philosophy), Confucianism (Moral Philosophy), Later Mohism (logic), and Taoism (Metaphysics).

ISL 210F **Islamic Religious and Social Institutions** 2L
This course examines the basic religious institutions of Islam, and discusses the relations between ritual *('Ibadah)* and customary practice *('Adah).* In addition, social institutions, such as marriage and divorce, the relation between the individual and the family unit, and aspects of community life will be discussed.
Recommended co-requisite: ISL 211S Islamic Political Institutions.

NES 273 **Medieval Jewish History to 1789** (Not offered 1970-71)

PHL 205F **Philosophy of Religion** 2L

REL 300 **Modern Atheism** 2L,1T
Roots, causes and forms of modern atheism; atheist-theist confrontation and dialogue in context of "global village," electronic revolution, space exploration; substitutes for God; the new orthodoxy.

REL 301 **Religious Experience in the Creative Arts** 2L,1T
A creative response to sacred and profane religious expression through the arts. This course will seek to uncover a contemporary understanding of religious experience through involvement with, and study of, art, literature, drama, music and media.

REL 302 **Architects of Modern Religious Thought** 2L,1T
Recent and contemporary thinkers, schools and trends in religious philosophy and their respective relevance to human problems. Special attention will be given to existential and scientific developments. Among those who may be studied are: Marcel, Heidegger, Buber, Heschel, Jung, Bonhoeffer, Tillich, Bultmann, Teilhard, and today's radical theologians and secularizers.

REL 303 **Jewish-Christian Religious Movements 200 B.C.–150 A.D.** 2L,1T
A study of Jewish religious movements and religious literature from the Maccabean revolt to Bar Kochba, including apocryphal and apocalyptic writings, Qumran, Philo, and the early Tannaite Rabbis; and of problems and developments in Christian history and thought from the beginnings to the writings of Justin Martyr.
(May not be combined with †REL 303F in any degree programme.)

REL 304 **Religion and Imaginative Literature** 2L,1T
Principally aimed at the analysis and interpretation of different kinds of religious insight in great authors, the course also attempts to develop responsible approaches to the seriousness of the concerns expressed in various kinds of literature. Selected works from Dostoevsky, Tolstoy, Joyce, Eliot, Mauriac, Bernanos, Camus, Miller, Salinger, Updike, St. Exupery.

REL 305S **Eastern Christianity** (Not offered 1970-71)
An examination of the history and spirit of Christian theology in the East and the Eastern approach to such issues as Christology, the Church, authority, liturgy, and eschatology.

REL 306 **Teilhard de Chardin: His Impact on Modern Man** 2L,1T
Cosmic and biological evolution–biblical, theological, and philosophical dimensions; hominization and the personalizing universe; the mystery of matter and spirit; cosmic spirituality; the mystery of evil and sin; the energetics of love; the Omega Point and the Cosmic Christ; beyond the Teilhardian synthesis.

REL 307 **The Concept of God** (Not offered 1970-71)
A lecture and tutorial course on the origin and development of the concept of God in primitive religion, in the Old Testament, in Greek thought and in early, medieval and modern Christianity, with special emphasis on problems that have arisen in recent times.

REL 308 **Christianity and Civilization: 1054–Present** 2L,1T
A lecture and reading course on divisions of Christendom, interaction of Christian faith and emerging secular world, mutual influences of Christianity and culture in East and West.

REL 309 **Hinduism II: Theistic Traditions** 2L,1T
Worship, symbols and literature of theistic Hindu religion, especially in the Vaishnava tradition of loving devotion *(bhakti).*

REL 310F **Problems in Contemporary Roman Catholicism** 2L,1T
A study of the Catholic crisis after the second Vatican Council, with special emphasis on its ideological background and its current theological conflicts.

REL 312 **Religious Reflections on the Holocaust** 2L,1T

REL 313F **The Earliest Christian Literature** 2L,1T
A study of the earliest Christian writings that survive (the letters of Paul) and of the earliest Gospel (the Gospel according to Mark).
(May not be combined with †REL 303S in any degree programme.)

REL 314F **Johannine Questions** 2L,1T
A study of the authorship of, and background influences on, the Gospel according to John.

REL 315 **Religion in Canada** 2L,1T
A seminar course on the changing character and role of religion in Canada. Possible topics: religion and politics (e.g., Social Credit, nationalism); religion and patterns of living (e.g., "Christianizing" and "Canadianizing" natives and immigrants, religion in Quebec, Doukhobors and other communal groups); recent developments (e.g., the expansion of the Pentecostal movement).

REL 316 **Religious Dimensions of Political Action** 2L,1T

REL 317 **Religious Dimensions of Human Behaviour** 2L,1T
A study of the changing roles of religion in the process of growth and development, individual and social.

REL 318F **Religious Dimensions of Education** 2L,1T
Parallels and interaction between patterns of change in education and religion: polarities such as abiding values/growth; answering/asking; content/method; control/self-determinism; achievement/fulfillment.

REL 319S **The Theology of Ingmar Bergman** 2L,1T
A viewing and study of The Seventh Seal, Wild Strawberries, The Magician, Through a Glass Darkly, Winter Light, The Silence, and Persona.

REL 320Y **Symbolism in the Bible** 1L,1T
A study of the Bible based on the conception of its imaginative and doctrinal unity, and approached through an examination of its recurrent themes and images. Some attempt will be made to indicate how this traditional view of the Bible has influenced the poetry and thought of the Western world.

REL 321F **Roots of Western Religion in Nordic Mythology** (Not offered 1970-71)

REL 322S **The Preternatural in Western Religious Traditions** 2L,1T

ANT 341 **Anthropology of Religion** 2L
Prerequisite: ANT 204 or Instructor's Permission

HIS 335 **Religion and English Society, 1785-1875** 2T
Major themes of religious history set within a systematic examination of secular society. The course begins with a consideration of the fundamentals of the sociology of religion and then discusses the relationship between religion and class structure, the social policies of church and sects, the problems of education and science, the nature of revivalism and anti-catholicism and the growth of unbelief. *J. P. B. Kenyon.*
(May not be combined with †HIS 435 in any degree programme.)

ISL 310 **Sufism: Mysticism in Islam** 2L
This course deals with the teachings and practices of the mystics in Islam, known as Sufis. The doctrines and disciplines of selected Sufi teachers, and their influence on the development of Islamic civilization, will be examined.

ISL 312F **Islamic Theology and Philosophy** 2L
This course traces the development of medieval Islamic theology *(kalam)* and philosophy *(falsafah)*, showing how these represent two divergent views of God and creation. The thought of Avicenna, al-Ghazali and Averroes will be emphasized.

ISL 316F **Ithna ᶜAshari ("Twelver") Shiᶜism** (Not offered until 1971-72)
After tracing the historical development of Ithna ᶜAshari Shiᶜism, from its origin as a political movement in the 7th century A.D., the course concentrates on its later developments, in the Iranian context, as a messianic religious movement, and as an essential ingredient of Persian nationalism.

NES 361 **Literature of Israel in Translation 600 B.C.-200 A.D.** 1L,1T
Against the background of the life and culture of Western Asia, a study will be made of the history and religious thought of the Palestinian Jews from c. 600 B.C. to the time of the Mishna.

NES 371 **Modern Jewish History (1789 to the present)** (Not offered 1970-71)

PHL 326S **Problems in the Philosophy of Religion** 2L
A systematic examination of specific problems in the Philosophy of Religion.
Prerequisite: PHL 205F

NOTE: Students should consult the Department regarding admission to the following REL courses in which enrolment may be limited.

REL 400 **Individual Reading and Research** Arranged
Student-initiated projects arranged in co-operation with chosen instructors.

REL 401 **Seminar in Comparative Religion** 2T

REL 402 **Seminar on the Personal and the Interpersonal** 2T

REL 403 **Contemporary Religious Thinkers** 2T
Seminar related to a departmental series of addresses by visiting and resident religious thinkers.

REL 404 **Seminar in Religious Ethics** 2T

REL 405 **Seminar in Philosophy of Religion** 2T

REL 410 **Seminar on Aspects of Islam** 2T

REL 411 **Selected Major Christian Theologians** 2T

REL 412 **The Theology of Paul Tillich** 2T

NES 461 **Apocalyptic Literature in Translation** 1L,1T
The rise of apocalyptic in the Old Testament; the Dead Sea scrolls; the inter-Testamental writings; apocalyptic material in the New Testament, including the Book of Revelation.

RUSSIAN

See "Slavic Languages and Literatures"

SANSKRIT

See "East Asian Studies"

SERBO-CROATIAN

See "Slavic Languages and Literatures"

SLAVIC LANGUAGES AND LITERATURES

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

SLA 100 **First Year Russian** 3T,2P
Fundamentals of Russian grammar. Practice in aural comprehension, speaking, reading and writing.
(May not be combined with SLA 121 in any degree programme.)

SLA 110 **Introduction to Russian Literature: Special Topics** 2L,1T
Readings in translation, ranging over all periods of Russian literature. Several members of staff will lecture on selected topics.

SLA 121 **First Year Russian for Matriculants** 3T,1P
Review of morphology; syntax; the simple sentence. Extensive reading, including fictional materials. Phonetic exercises. Composition and translation; oral practice based on assigned reading and topics of current interest. Conducted in Russian.
(May not be combined with SLA 100/220 in any degree programme.)
Prerequisite: XIII RUSS

SLA 201 **Intensive Russian Reading** 3T
Emphasis on vocabulary building and rapid, accurate translation from Russian to English of scholarly and journalistic prose. Especially for students in the natural and social sciences. A terminal course which will not satisfy the prerequisite for SLA 221 or 320.
(May not be combined with SLA 220/221 in any degree programme.)
Prerequisite: XIII RUSS/SLA 100

SLA 205 **Elementary Czech** (Not offered 1970-71)
Grammar, composition and conversation. Selected readings from Czech and Slovak authors.
(Not offered in 1970-71, 1973-74, 1976-77)

SLA 206 **Elementary Polish** 3T,1P
Grammar, composition and conversation. Regular language laboratory sessions. Selected readings of contemporary Polish texts.
(Not offered in 1971-72, 1974-75, 1977-78)

SLA 207 **Elementary Serbo-Croatian** (Not offered 1970-71)
Grammar, composition; some conversation and language laboratory sessions. Emphasis on reading knowledge. Selections from Yugoslav authors.
(Not offered in 1970-71, 1973-74, 1976-77)

SLA 208 **Elementary Ukrainian** 3T,1P
Grammar, composition; emphasis on reading knowledge. Voluntary language laboratory for those wishing practice in spoken Ukrainian.
(Not offered in 1971-72, 1974-75, 1977-78)

SLA 215 **Problems of Czech and Slovak Literatures and Cultures** 2L
Historical and cultural heritage and formation of a common State; national revival in the 19th century; place of intellectuals in the "First Republic" (1918-1938); national spirit, parochialism; universality in Czech and Slovak literatures; literature and freedom: spring and summer 1968. Reading in translation.
(Not offered in 1972-73, 1975-76)

SLA 216 **Problems of Polish Literature and Culture** (Not offered 1970-71)
Early developments; Renaissance and Baroque; 19th century literature: romantic poetry, realism in the novel *Young Poland;* the re-establishment of the Polish state; contemporary Poland, 1945-60. Reading in translation.
(Not offered in 1970-71, 1973-74, 1976-77)

SLA 217 **Problems of Serbo-Croatian Literature and Culture** 2L
Mediaeval period; Renaissance literature in Dubrovnik; folk literature; national revival and romanticism; realism and modernism before and after creation of the common state; contemporary trends. Reading in translation.
(Not offered in 1972-73, 1975-76)

SLA 218 **Problems of Ukrainian Literature and Culture** (Not offered 1970-71)
Mediaeval period; 16th and 17th centuries; Baroque; Classicism and Romanticism; Realism and Modernism: Ukraine between the two world wars; literature since World War II. Critical analysis of representative literary and oral works in translation.
(Not offered in 1970-71, 1973-74, 1976-77)

SLA 305 **Advanced Czech** 4T
Study of selected areas of morphology; syntax; composition and translation; oral practice. Selected texts, representing diverse styles, studied in the original Czech and Slovak.
(Not offered in 1971-72, 1974-75)
(May not be combined with †SLA 471 in any degree programme.)
Prerequisite: SLA 205 (or †SLA 371)

SLA 306 **Advanced Polish** 3T,1P
Review of morphology. A study of syntax, word formation and selected literary texts (prose, poetry, literary criticism). Translation from English into Polish. Practice in oral comprehension: language laboratory sessions devoted to tapes of Polish radio broadcasts and of literary works.
(Not offered in 1972-73, 1975-76)
(May not be combined with †SLA 441 in any degree programme.)
Prerequisite: SLA 206 (or †SLA 341)

SLA 307 **Advanced Serbo-Croatian** 4T
Completion of morphology. Syntax of phrases, simple and compound sentences. Translation, composition, and oral practice based on extensive reading from Yugoslav authors. Emphasis on reading knowledge.
(Not offered in 1971-72, 1974-75)
(May not be combined with †SLA 451 in any degree programme.)
Prerequisite: SLA 207 (or †SLA 351)

SLA 308 **Advanced Ukrainian** 4T
A review of morphology and a study of syntax. Short compositions based on selected literary and critical texts. Voluntary language laboratory for those wishing practice in spoken Ukrainian.
(Not offered in 1972-73, 1975-76)
(May not be combined with †SLA 461 in any degree programme.)
Prerequisite: SLA 208 (or †SLA 361)

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

SLA 210 **The Nineteenth Century Russian Novel** 2L,1T
Reading in translation of major works by Pushkin, Gogol, Turgenev, Goncharov, Dostoevsky, Tolstoy and others. The development of the novel as a literary form: structural and thematic evolution; native and foreign influences—Romanticism and Realism.
(May not be combined with SLA 240 in any degree programme.)

SLA 212 **Russian Drama** 2L
An historical survey of the Russian theatre: origins, development of genres, relations with prose, poetry, and opera, impact on modern Western drama. Plays in translation from the classical (Fonvizin, Griboedov), romantic (Pushkin, Gogol), realistic (Ostrovsky), modernistic (Chekhov, Blok, Mayakovsky), and Soviet repertory.

SLA 220 **Second Year Russian** 3T,1P
Study of more difficult areas of morphology; syntax: the simple sentence. Reading of literary selections and works of non-fiction. Oral practice. Composition and translation; conversation based on reading and topics of current interest.
(May not be combined with SLA 120/221 in any degree programme.)
Prerequisite: SLA 100

SLA 221 **Second Year Russian for Matriculants** 3T,1P
Study of more difficult areas of morphology; syntax; oral practice; intensive and extensive readings; composition and translation; conversation based on reading and topics of current interest. Conducted in Russian.
(May not be combined with SLA 220 in any degree programme.)
Prerequisite: SLA 121

SLA 240 **The Nineteenth Century Russian Novel** 2L,1T
Same as SLA 210, but with some readings in Russian. Lectures in common with SLA 210 but separate tutorial groups. Required for specialists in Slavic Languages and Literatures.
(May not be combined with SLA 210 in any degree programme.)
Co-requisite: SLA 220/221

SLA 311 **Slavic Civilization** 2L
The origins and prehistory of the Slavs; the material and spiritual culture of the early Slavs; the emergence of Slavic nationalities and their political, social and cultural development; the contribution of the Slavs to world culture and their role in history. (May not be combined with †SLA 433 in any degree programme.)

SLA 312 **Tolstoy and Dostoevsky** 2L
A comparative study of the two novelists. Readings (in translation) will include, in addition to other writings, *War and Peace, Anna Karenina, Crime and Punishment* and *The Brothers Karamazov.* Prospective students are advised to read at least two of these works in the summer preceding the course.

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

SLA 310 **The Twentieth Century Russian Novel** 1L,2T
Major trends in pre- and post-revolutionary Russian literature. Particular attention will be paid to Gorky, Kuprin, Bunin, Andreev, Merezhkovsky, Bely and Sologub in the first term; and to Zamyatin, Babel, Olesha, Leonov, Fadeev, Pasternak and Solzhenitsyn in the second term. Readings in translation.
(May not be combined with SLA 340 (or †SLA 325/426) in any degree programme.)

SLA 320 **Third Year Russian** 3T,1P
Continued study of grammar: syntax and especially difficult areas of morphology. Composition, translation and stylistic analysis of selected texts. Oral practice in class and in laboratory based on assigned readings. Extensive reading programme.
(May not be combined with SLA 321 (or †SLA 322) in any degree programme.)
Prerequisite: SLA 220

SLA 321 **Third Year Russian for Matriculants** 3T,1P
Continued detailed study of morphology, with emphasis on principles of Russian word formation. Syntax of compound and complex sentences. Composition, translation and lexicogrammatical analysis of selected texts. Practical Russian stylistics. Extensive reading. Oral practice. Conducted in Russian.
(May not be combined with SLA 320 (or †SLA 320/322) in any degree programme.)
Prerequisite: SLA 221

SLA 330 **Old Church Slavonic and History of Russian** 2T
Old Church Slavonic and History of Russian. First term: Structure and history of Old Slavonic. Old Slavonic texts. Second term: Russian Historical Grammar. Old Russian texts.
(May not be combined with †SLA 335 in any degree programme.)
Prerequisite: SLA 221
Co-requisite: SLA 221/320

SLA 332 **Structure of Russian** 2T
The Russian language in the light of various linguistic theories.
Prerequisite: SLA 221
Co-requisite: SLA 221/320

SLA 340 **The Twentieth Century Russian Novel** 1L,2T
Major trends in pre- and post-revolutionary Russian literature. Particular attention will be paid to Gorky, Kuprin, Bunin, Andreev, Merezhkovsky, Bely and Sologub in the first term; and to Zamyatin, Babel, Olesha, Leonov, Fadeev, Pasternak and Solzhenitsyn in the second term. Readings in the original and in translation. Required for Specialists in Russian and Slavic.
(May not be combined with SLA 310 (or †SLA 325/426) in any degree programme.)
Co-requisite: SLA 320/321

COURSES OPEN TO FOURTH-YEAR STUDENTS

SLA 405 **Studies in Czech and Slovak Literatures** 2T
The works of some of the following nineteenth and twentieth century authors. Czech: Mácha, Erben, Němcová, Havliček, Neruda, Jirásek, Rais, Vrchlicky, Sládek, Březina, Šalda, K. Čapek, Vančura, Hašek, Hostovsky, Olbracht, Nezval, Seifert, Halas, Holan, Hora, Hrubin, Deml, Holub, Hrabal, Skvorecky, Kundera. Slovak: Kral', Hviezdoslav, Krasko, Novomesky, Bednar, Válek, Stacho, Šikula.
Prerequisite: SLA 305 (or †SLA 471)

SLA 406 **Studies in Polish Literature** (Not offered 1970-71)
A study of the basic forms of Polish literature, with prose, poetry and drama offered in rotation. Each year a particular genre, such as lyric poetry or the novel, will be examined historically. Readings in Polish.
Prerequisite: SLA 306 (or †SLA 441)

SLA 407 **Studies in Serbo-Croatian Literature** 2T
A survey of major trends and authors in Serbo-Croatian literature from its beginnings to the present day. Reading in the original and in translation, with emphasis on novels translated into English.
Prerequisite: SLA 307 (or †SLA 451)

SLA 408 **Studies in Ukrainian Literature** 2T
A study of major authors in Ukrainian literature with a view to a survey of its development. All readings in the original.
(Not offered in 1973-74, 1976-77)
Prerequisite: SLA 308 (or †SLA 461)

SLA 420 **Advanced Russian Composition and Conversation** 3T
Continued study of syntax. Detailed analysis of selected texts, and exercises in practical stylistics. Composition, précis and critical evaluation of literary works and articles (in Russian). Extensive reading and translation of fiction and non-fiction. Oral reports followed by discussion.
(May not be combined with SLA 321/421 (or †SLA 322/422) in any degree programme.)
Prerequisite: SLA 320

SLA 421 **Advanced Russian for Matriculants** 3T
Programme similar to SLA 420, but designed for matriculants, *i.e.*, a more advanced

level of composition, translation, oral practice, etc. Conducted in Russian.
(Offered in 1970-71 if number of requests sufficient.)
(May not be combined with SLA 420 (or †SLA 422) in any degree programme.)
Prerequisite: SLA 321 (or †SLA 322)

SLA 436 **Slavic Linguistics** 2T
A study of the work of the major Slavic linguists and philologists.
Prerequisite: SLA 330/332 (or †SLA 335)
Co-requisite: SLA 330/332

SLA 440 **Russian Poetry 1815-1960** 3T
A study of the major nineteenth and twentieth century poets: their forms, styles, themes. Special attention given to the poetry of Pushkin, Lermontov, Tiutchev, Nekrasov, Fet, Blok, Mayakovsky. Selections from the works of Batiushkov, Baratynsky, Yazykov, Venevitinov, Kol'tsov, Bryusov, Gumilev, Akhmatova, Pasternak. Readings in Russian.
(May not be combined with †SLA 432 in any degree programme.)
Prerequisite: SLA 320/321/340 (or †SLA 322/325)

SLA 442F **Old Russian Literature** 1L,2T
A survey of the literary heritage of medieval Russia, from Kievan Rus through the seventeenth century. Chronicles, military tales, epics, hagiography, sermons, and the *povest* in their historical development. Emphasis will be on the literary aspects of these monuments. Readings in Russian.
(May not be combined with †SLA 430 in any degree programme.)
Prerequisite: SLA 320/321 (or †SLA 322)

SLA 443S **Eighteenth Century Russian Literature** 1L,2T
A survey of the literary events and personalities of the eighteenth century, a crucial period in the development of modern Russian literature. Evolution of the literary language, experiments in verse form, emergence of such genres as the ode, the fable, the epic and mock-epic, the drama and prose fiction.
(May not be combined with †SLA 430 in any degree programme.)
Prerequisite: SLA 320/321 (or †SLA 322)

SLA 444F **Russian Short Fiction in the Nineteenth Century** 3T
A study of the basic forms and motifs of the genre. Particular attention will be paid to Pushkin, Gogol, Turgenev and Chekhov. The works of some of the following authors will also be studied: Karamzin, Marlinsky, V. Odoevsky, Lermontov, Grigorovich, Shchedrin, Leskov, Garshin, Korolenko, Gorky.
Prerequisite: SLA 221/320

SLA 445S **Russian Short Fiction in the Twentieth Century** 3T
A study of the basic forms and motifs of the genre. Special attention will be paid to Bunin, Babel, Zoshchenko, Olesha, Solzhenitsyn. The works of some of the following writers will also be studied: Kuprin, Zamyatin, Remizov, Leonov, Fedin, Vs. Ivanov, A. Tolstoy, Nagibin, Kazakov, Syomin, Belov.
Prerequisite: SLA 221/320

SLA 446 **Literature and Politics in Soviet Russia** 2T
The impact of literary theories and writers' organizations on literature. Origins and nature of political control of literature. Resistance to Party policies. Readings in Russian and in translation. Lectures and oral reports.
Prerequisite: SLA 221/320

SOCIOLOGY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

NOTE: SOC 101-106 are introductory courses. No two of these may be combined, nor may any one be combined with †SOC 100/101, in any degree programme. Any one of these courses is strongly recommended as preparation for all other SOC courses. Instructors in subsequent courses will assume the student has the background knowledge provided by an introductory sociology course. More detailed descriptions of SOC 101-106 may be obtained from the Department of Sociology.

SOC 101 **Analysis of Human Behaviour** 2L,½T
This course explores, through lectures, discussion groups and field work, how one understands the patterning of human (social) behaviour. Illustrations are drawn from a range of instances from small to large-scale social phenomena.

SOC 102 **Canadian Society** 2L,½T
An analysis of contemporary social problems within the context of Canadian society. A sociological perspective will be applied to current social issues such as changing sex roles, student unrest and alienation.

SOC 103 **Stratification and the Ideologies of Social Change** 2L,½T
Liberal, communist and anarchist interpretations of social inequality. An historical analysis of strategies of social change and an assessment of their relative success.

SOC 104 **Industrial Society** 2L,½T
An introduction to sociological analysis with an emphasis on the social sources and consequences of economic change and political stability and instability.

SOC 105 **Social Structure and Social Change** 2L,½T
Basic concepts and principles, with an emphasis on major trends in contemporary society seen through the varied perspectives of sociologists, from the impressionistic to the systematic. Recommended reading prior to the course: Peter Berger, *Invitation to Sociology* (Anchor paperback).

SOC 106 **Urban Society** 2L,½T
An introduction to sociology through an analysis of modern urban society. Social structure, social institutions, and the position of the individual in urban society will be studied.

NOTE: More detailed descriptions of SOC 201-207 may be obtained from the Department of Sociology.

SOC 201 **Statistics and Research Methods** 2L,1T

An introduction to the logic of research procedures, methods of collection, presentation and analysis of sociological data, including an elementary consideration of the principles of quantitative research.

(May not be combined with GGR 270, GLG 221Y, STA 232, STA 242, STA 252, ECO 220, POL 206, PSY 201S in any degree programme.)

Suggested prior course: Any one of SOC 101-106.

SOC 202 **Structure of Inter-Personal Relations** 2L,½T

The study of patterned relationships, social roles and social expectations which arise out of interactions among individuals.

Suggested prior course: Any one of SOC 101-106.

SOC 203 **History of Social Theory** 2L,1T

This course is concerned with the development of sociology and with the works of particular sociologists whose concepts not only have historical interest but also have relevance to contemporary sociology.

(May not ordinarily be combined with SOC 313 in any degree programme.)

Suggested prior course: Any one of SOC 101-106.

SOC 204 **Political Sociology** 2L,1T

The social bases of politics. Culture and social organization in their relation to power and its applications.

Suggested prior course: Any one of SOC 101-106.

SOC 205 **Urban Sociology** 3L

Examines the city both as a significant development in world civilization and as a working mechanism guided by contemporary policies and studies human behaviour in its multifaceted relations with the urban environment.

Suggested prior course: Any one of SOC 101-106.

SOC 206 **Comparative Social Structure** 2L,½T

A course in comparative sociology dealing with institutions and structures in different societies in an attempt to develop more reliable knowledge of human behaviour and social structure.

Suggested prior course: Any one of SOC 101-106.

SOC 207 **Sociology of Occupations** 2L,1T

The relation of man to his occupations in contemporary society, including such topics as the human element in bureaucracies, occupational choice in a changing society, and modern conceptions of work and leisure.

Suggested prior course: Any one of SOC 101-106.

COURSES OPEN TO THIRD- AND HIGHER-YEAR STUDENTS

NOTE: Second-year students may be admitted to not more than one of SOC 301-313 if space is available, provided they have already had a 100-series SOC course and are concurrently taking two 200-series SOC courses.
More detailed descriptions of SOC 301-318 may be obtained from the Department of Sociology.

SOC 301 **Social Stratification** 2L,1T
Examines the various systems by which, in all human societies, rewards (such as prestige, power, wealth, and others) are differentially distributed, and the principal theories which have attempted to account for these phenomena.
Prerequisite: One course in SOC

SOC 302 **The Sociology of the Family** 3L,1T
The development of the contemporary Western family with special emphasis on the changing relations among its members.
Prerequisite: One course in SOC

SOC 303 **Canadian Society** 2L,1T
An analysis of the changing structure of Canadian society.
Prerequisite: One course in SOC

SOC 304 **Industrial Sociology** 2L,1T
The impact of industrialization on social roles and institutions created by the process of industrialization itself.
Prerequisite: One course in SOC

SOC 305 **Sociology of Religion** 2L,1T
In this course various theories of religious behaviour and organization will be examined. The role of religion in relation to social change and social integration will be given special attention. Current research and methods of study will also be stressed.
Prerequisite: One course in SOC

SOC 306 **Sociology of Crime and Delinquency** 2L,1T
A discussion of theories and studies of crime and delinquency, together with an examination of the role of the police, the courts, prisons and other institutions of social control.
Prerequisite: One course in SOC

SOC 307 **Sociology of Economic Development** 2L,1T
The relation between sociological factors and economic development examined from a comparative perspective, with particular attention to the contributions of Marx, Durkheim, Pareto, and Weber. Topics include the role of elites, religion, and the family, especially in emerging nations.
Prerequisite: One course in SOC

SOC 308 **Deviant Behaviour** 2L,1T
A sociological analysis of deviant behaviour which examines theories of its genesis, social definition, maintenance, control, and social consequences.
Prerequisite: One course in SOC

SOC 309 **Collective Behaviour** 2L,1T
This course is concerned with the social conditions that produce collective behaviour and the effect it has on group conflict, morale, consensus and changing patterns of social organization.
Prerequisite: One course in SOC

SOC 310 **Race and Ethnic Relations** 3L,1T
Analysis of the impact of racial, ethnic, and linguistic heterogeneity on various economic processes, on the institutional and non-institutional access to political power, and on self conceptions, social attitudes, and personality characteristics. The formation, maintenance, and disappearance of ethnic communities will also be considered.
Prerequisite: One course in SOC

SOC 311 **Sociology of Education** 2L,1T
Focuses on the relationship between education and society in comparative perspective; on the internal structure of educational systems and on the educational consequences of different organizational arrangements; on the current controversies surrounding the function and structure of the university.
Prerequisite: One course in SOC

SOC 312 **Population and Society** 2L,1T
An analysis of mortality, fertility, and migration and the relation to population, social structure, mobility, and social change.
Prerequisite: One course in SOC

SOC 313 **The Development of Sociological Theory** (Not offered 1970-71)
The development of sociological theory from the eighteenth century to contemporary times with special reference to Condorcet, Burke, Malthus, Comte, Mill, de Tocqueville, Marx, Weber, Durkheim, Pareto, Sorel, Michels, Freud, and Parsons.
(May not ordinarily be combined with SOC 203 (or †SOC 323) in any degree programme.)
Prerequisite: One course in SOC

SOC 314 **Formal Organizations** 3L
An advanced course in the sociology of bureaucracy and administrative organization, emphasizing the environmental contexts of administrative decision and their relation to internal processes of organizational change.
Prerequisite: SOC 204/207

SOC 315 **Workshop in Urban Sociology** 2L,2P
An advanced course involving intensive work with empirical data in the field of urban sociology. Enrolment limited.
Prerequisite: SOC 201 & 205

SOC 316 **Workshop in Political Sociology** 2L,2P
An advanced course involving the intensive use of quantitative and other empirical materials relevant to political sociology. Enrolment limited.
Prerequisite: SOC 201 & 204

SOC 317 **Workshop in Small Group Processes** 2L,2P
An advanced course involving intensive work with experimental and other data used in the study of small groups. Enrolment limited.
Prerequisite: SOC 201 & 202

SOC 318 **Advanced Research Methods** 3L,1P
This course has three major emphases: (a) formalization and operationalization of theory, (b) research design, data collection, and analysis, and (c) computer techniques in social research.
Prerequisite: SOC 201, & 203/313 (or †SOC 301/323)
Co-requisite: SOC 203/313

COURSES OPEN TO FOURTH-YEAR STUDENTS

SOC 401 **Systematic Sociological Theory** 2L,1T
A systematic analysis of the methodological and theoretical sources of some of the main controversies in contemporary sociological theory.
Prerequisite: SOC 203/313 (or †SOC 301/323) and one other SOC course. At least one of these shall have been a 300-series course.

Students should consult the Department regarding admission to the following:

SOC 451F **Seminar in a Particular Field** Arranged

SOC 452S **Seminar in a Particular Field** Arranged

SOC 490 **Independent Research** Arranged
Open only when a faculty member is willing and available to supervise, with preference to students with at least Upper Second Class standing in the Third Year.

SPANISH

See "Italian and Hispanic Studies"

SYRIAC

See "Near Eastern Studies"

TURKISH

See "Islamic Studies"

UKRAINIAN

See "Slavic Languages and Literatures"

ZOOLOGY

COURSES OPEN TO FIRST- AND HIGHER-YEAR STUDENTS

BIO 100 **Principles of Biology** 2L,3P
See description under Biology.

BIO 120 **Evolutionary and Environmental Biology** 2L,3P
See description under Biology.

ZOO 200 **Selected Biological Aspects of Man** 2L,½T,1½P
Man believes he "heads" a system of higher and lower organisms and is consequently largely independent of that system. In this course we question this belief by examining some attributes of man and his relation to the past, present and future biosphere. Intended for non-biologists. *W. G. Friend, F. H. Rigler, J. J. B. Smith.*

COURSES OPEN TO SECOND- AND HIGHER-YEAR STUDENTS

ZOO 210 **The Living World** (formerly ZOO 320) 2L,½T,3P
The central theme of this course is a study of biology at the organism level, that is, the middle ground between the cell and the population. Using the simplest organisms as examples, and with especial emphasis on those that are intimately related to man, the principles generally relevant to all forms of life are examined. With this as a background, the life habits of animals from a variety of habitats will be discussed, in order to show how modifications of the same basic principles have contributed to the success of these animals in widely differing environments. *D. Mettrick.*

ZOO 211 **General and Human Genetics** (formerly ZOO 322) 2L,½T,1½P
This course builds on the material on genetics introduced in BIO 100/200 with a more detailed and complete account. These courses are, however, not prerequisite. The subject matter includes basic principles, classical genetics, molecular genetics and mechanisms governing expression of genetically controlled characteristics. In addition, consideration is given to principles of population genetics and to the place of genetics in the framework of evolution. The genetics of Man is stressed throughout. *A. G. Bell.*

ZOO 212 **Physiology and Development** (formerly ZOO 323) 2L,3P
The course emphasizes the contribution of the study of parts of animals to biology. It consists of selected topics of general interest. Some of these are: (a) levels of organization, organelles, cells, organs; and (b) developmental and functional interrelationships of cells and organs. Both physiology and developmental biology are used as examples of experimental science.
Prerequisite: None. (BIO 100/120 is suggested as preparation.)

ZOO 220 **Animal Form and Function** 2L,3P
This course deals with the structural diversity of animals, with emphasis on the functional rather than phylogenetic approach. Major topics include: levels of organization, locomotion and support, feeding, reproduction, respiration. *J. Berger, F. E. J. Fry, J. Machin, M. Telford.*
Prerequisite: None. (BIO 100/120 is recommended as preparation.)

ZOO 221 **Cellular and Developmental Zoology** 2L,3P
This course builds on the background in cellular biology obtained in the introductory course and integrates this with a study of developmental processes. Topics include cell structure, boundary functions, metabolic functions, protein synthesis, growth and division, tissue differentiation, and descriptive embryology. *J. Berger and S. Yuyama.*
Prerequisite: None. (BIO 100/120 is suggested as preparation.)

ZOO 222 **Animal Behaviour and Neurobiology** 2L,3P
This course proceeds from a consideration of physiological factors underlying behaviour to treatment of simple behavioural acts, and finally to complex behaviour. Topics include sense organs, central nervous system, effectors, reflex arcs, social behaviour, behaviour patterns, learning and memory. *D. W. Dunham, N. Mrosovsky, B. H. Pomeranz, J. J. B. Smith.*
Prerequisite: None. (BIO 100/120 is suggested as preparation.)

ZOO 223 **Ecology** 2L,3P
This course deals with the relationship of organisms to their physical and biotic environment. Topics include: study of a particular ecosystem, biotic community structure, analysis of community organization, physical factors of the environment, population processes, regulation of abundance, trophic structure and energetics, and human populations. *J. B. Falls, H. Welch.*
Prerequisite: None. (STA 232/242 and BIO 100/120 are suggested as preparation.)

ZOO 224 **Systematics and Phylogeny** 2L,3P
This course emphasizes the principles of animal classification and phylogeny. Topics include: taxonomy, nomenclature, characters, population variation and sexual dimorphism, statistical description, species concepts, numerical taxonomy, phyletics and cladistics, and current debates and future directions in systematics. *J. Rising.*
Prerequisite: None. (BIO 100/120 is suggested as preparation.)

ZOO 225 **Animal Physiology** 2L,3P
This course emphasizes the many different approaches in the field. It contains basic biophysics and biochemistry together with elements of cell, organ, comparative, whole animal and environmental physiology. Topics include (a) Osmoregulation, (b) Nutrition, (c) Respiration, (d) Endocrinology and (e) Effector Physiology.
Prerequisite: None. (BIO 100/120 and CHM 235 are suggested as preparation.)
Co-requisite: BCH 320/321 recommended.

ZOO 226 **Principles of Genetics** 2L,3P
The description and treatment of the genetic methods used in studying a wide range of species are presented as examples of the application of the scientific method. The gene in both individuals and populations is discussed from an operational, mutational, cytological, and biochemical viewpoint. The application of genetic techniques to various biological disciplines is illustrated. *L. Butler, I. Tallan.*
Prerequisite: None. (BIO 100/120 is suggested as preparation.)

ZOO 250 **Comparative Anatomy** (formerly ZOO 350) 1L,½T
A course on the structural diversity and classification of vertebrates. *T. S. Parsons.*
Prerequisite: None. (BIO 100/120 is suggested as preparation.)

ZOO 251 **Comparative Histology** (formerly ZOO 351) 2L,3P
This course emphasizes the concept that anatomy is physiology studied at a point in time. It includes an introduction to the principal techniques used in the study of cell structure and function, followed by a description of the primary tissues then by considerations of their structural adaptations to special functions in various organs. *J. Lai-Fook.*
Prerequisite: None. (BIO 100/120 is suggested as preparation.)

ZOO 252 **Parasities and Parasitism** (formerly ZOO 352) 2L,3P
A lecture and laboratory course in which the whole organism and its interrelationships with others will be discussed. Biological principles will be developed from considerations of the morphology and life cycles of selected organisms, their evolutionary history, and their adaptations to a parasitic mode of life.
Prerequisite: None. (BIO 100/120 is suggested as preparation.)

ZOO 253 **Invertebrate Zoology** (formerly ZOO 423) 1L,3P
The classification of the Invertebrate Phyla emphasising the laboratory study of the diversity of each group together with the fundamental organization of a number of examples of the major Phyla. Collections and microscope preparations are submitted for credit. *R. O. Brinkhurst.*
Prerequisite: ZOO 220

ZOO 254 **History of Biological Science** (formerly ZOO 400) 1L,1T
Some philosophies of Science are presented and their implications for biology discussed. Selected topics are used to illustrate the development of mechanistic and evolutionary theory. *F. H. Rigler.*
Prerequisite: BIO 100/120

BIO 300 **Terrestrial and Freshwater Biology** Arranged
See description under Biology. (Not for credit.)

BIO 301 **Marine Biology** Arranged
See description under Biology. (Not for credit.)

COURSES OPEN TO FOURTH-YEAR STUDENTS

ZOO 420 **Molecular Genetics** (formerly ZOO 431) 2L,1T
A lecture course dealing with the concept of the gene, the manner in which it determines protein specificity and the genetic control of enzyme synthesis; and the mode of recombination in microorganisms leading to a discussion of the molecular basis of DNA replication, mutation and recombination. *I. Tallan.*
Prerequisite: ZOO 226

ZOO 421F **Human Genetics** (formerly ZOO 432) 1L,3P
A course on the major features of the genetics of man, including his Mendelian inheritance, biochemical genetics, cytogenetics, and population genetics. The laboratory illustrates major principles by practical work and demonstrations. *T. E. Reed.*
Prerequisite: ZOO 211/226 (or †ZOO 322/426)

ZOO 422S **Population and Statistical Genetics of Man** 1L,3P
A course on the mathematical aspects of human genetics, including population genetics, quantitative genetics, and certain other more specialized areas. *T. E. Reed.*
Prerequisite: None. (ZOO 421F, knowledge of elementary statistics and differential calculus recommended.)

ZOO 430 **Developmental Biology** (formerly ZOO 424) 1L,3P
A course in experimental vertebrate, embryology and morphology and including consideration of the factors controlling limb regeneration in amphibians. *R. A. Liversage.*
Prerequisite: ZOO 221

ZOO 431 **Cellular Aspects of Development** (formerly ZOO 438) 1L,3P
The topics discussed in this course are the control of gene activity and nucleocytoplasmic interaction during embryonic development and gametogenesis, cellular interaction during differentiation, and cellular inheritance of tissue specificities. *Y. Masui.*
Prerequisite: ZOO 221

ZOO 432 **Cell Biology** (formerly ZOO 437) 1L,3P
Laboratory exercises supplemented by discussions on the energy relations of living cells, together with recent developments in the field. Enrolment limited. *A. M. Zimmerman.*
Suggested preparation: BCH 320/321

ZOO 433 **Radiation Biology** (formerly ZOO 442) 1L,3P
A course stressing the cellular effects of radiation. Enrolment limited. *G. M. Clark.*
Prerequisite: None. (BIO 100/120 is suggested as preparation.)

ZOO 440 **Comparative Endocrinology** 1L,3P
A course dealing primarily with the anatomy and physiology of endocrine glands in non-mammalian vertebrates. Endocrine control mechanisms for vertebrate homeostasis. *D. G. Butler.*
Prerequisite: ZOO 225, BCH (320 & 370Y)/(321 & 371Y)

ZOO 441Y **Neurophysiology** (formerly ZOO 439) 2L
A course providing an understanding of the physiology of nerves, muscles, sensory receptors, and nervous systems, and considering some recent research in this area. *H. Atwood, B. H. Pomeranz, J. J. B. Smith.*
Prerequisite: ZOO 222

ZOO 442Y **Neurophysiological Experimentation** 4P
A laboratory course providing training in methods used in neurophysiology. Individual research projects may be pursued. Limited enrolment. *H. Atwood, B. H. Pomeranz, J. J. B. Smith.*
Prerequisiste: ZOO 221. Permission of instructors is required.
Co-requisite: ZOO 441Y

ZOO 450 **Animal Behavior** (formerly ZOO 441) 1L,3P
A course on the principles and methods of ethology, that deals with questions of the causation, function, survival value, and evolution of behaviour. *A. J. Hogan.*
Prerequisite: ZOO 222

ZOO 460 **Protozoology** 1L,3P
The biology of the Protozoa. Lectures on ultrastructure, cytology, physiology, reproduction, genetics, evolution, and ecology of freeliving and parasitic protozoa; laboratory will stress protozoan morphology systematics, life-cycles, special techniques used to prepare protozoa for microscopical examination, and host-examination. *J. Berger.*
Prerequisite: ZOO 220/221/252/253 (or †ZOO 352/423)

ZOO 461 **Entomology** (formerly ZOO 430) 1L,3P
A course on the general features of insect life history, evolution, development; major types of insect food habits especially food finding, selection and utilization, insect habits and behaviour, especially social systems and their evolution. *C. E. Atwood.*
Prerequisite: BIO 100/120

ZOO 462 **Advanced Invertebrate Zoology** 1L,3P
A course on the phylogenetic theories that account for the various classifications of the invertebrates. Selected areas will be studied in depth. Laboratories will be set up as projects allowing students to produce new anatomical/morphogenetic evidence that test phylogenetic predictions. *R. O. Brinkhurst.*
Prerequisite: ZOO 253 (or †ZOO 423)

ZOO 463 **Advanced Vertebrate Zoology** (formerly ZOO 429) 4P
A laboratory and seminar course in which students pursue individual projects on vertebrate morphology, especially in relation to phylogeny and evolution. *T. S. Parsons.*
Prerequisiste: ZOO 250 (or †ZOO 350)

ZOO 464 **Vertebrate Palaeontology** (formerly ZOO 428) 4L
An illustrated laboratory-seminar course in the variety and evolution of extinct vertebrates, including consideration of the animals' modes of life and their environmental relationships in terms of modern evolutionary theory. *C. S. Churcher, T. S. Parsons.*
Prerequisite: ZOO 250 (or †ZOO 350)

ZOO 465 **Ichthyology** (Not offered 1970-71)
A seminar and laboratory course emphasizing the systematic Ichthyology of living fishes. Students do individual projects on Atlantic marine and Canadian freshwater species. *W. B. Scott.*
Prerequisite: ZOO 224 & 250

ZOO 466 **Mammology** 4P
The class Mammalia is reviewed using a systematic approach with consideration of general morphology, origin, evolution, adaptations, diversification, speciation, taxonomy and distribution. Lectures, seminars and laboratory periods are supplemented with individual projects, written reports and literature reviews. *R. L. Peterson.*
Prerequisite: ZOO 224 & 250

ZOO 467 **Ornithology** 4P
A lecture, laboratory and seminar course on basic avian biology and on the systematics and distribution of birds of the world. Laboratory work includes extensive use of the world-wide collection of the birds in the Royal Ontario Museum. *J. C. Barlow.*
Prerequisite: ZOO 224 & 250

ZOO 470Y **Limnology** (formerly ZOO 436) 1L,1T
A course on one ecosystem, the lake, emphasizing the physical and chemical variables that influence living organisms. Some ecological theories are described and studies of the limnetic community to test these theories are discussed. *F. H. Rigler, H. Welch.*
Prerequisite: One course in each of Biology, Chemistry, Ecology

ZOO 471Y **Limnology Practical** Arranged
Students work in pairs on one or more projects. The laboratory is open. *F. H. Rigler, H. Welch.*
Prerequisite: One course in each of Biology, Chemistry, Ecology
Co-requisite: ZOO 470Y

ZOO 472S **Behavioural Ecology** 1L,3P
A lecture and tutorial/laboratory course treating behavioural aspects of basic problems in ecology. Selected topics will include territoriality, habitat selection, reproductive isolation and population regulation. *D. W. Dunham, J. B. Falls.*
Prerequisite: ZOO 222 & 223

ZOO 473F **Animal Distribution** (formerly ZOO 422) 1L,3P
Lectures, tutorials, readings and practical exercises designed to elucidate principles of zoogeography and aspects of ecology bearing on the distribution of animals. *R. Hansell.*

ZOO 474F **Ecological Energetics** 2L,2P
A lecture, tutorial and practical course dealing with energy flow in ecological systems. *H. Welch.*
Prerequisite: ZOO 223

ZOO 475S **Environmental Factors** 2L,2P
A lecture, tutorial and practical course dealing with the effects of the physical environment on animals. *F. E. J. Fry.*
(May not be combined with †ZOO 434 in any degree programme.)
Prerequisite: ZOO 223

ZOO 476F **Biometeorology** (formerly ZOO 425) (Not offered 1970-71)
A course concerned with the interdisciplinary nature of biometeorology: its scope, methods, and objectives. A course more concerned with developing attitudes than techniques. *W. G. Wellington.*
(May not be combined with †ZOO 425 in any degree programme.)
Prerequisite: ZOO 223

ZOO 477S **Biometeorology Practical** (Not offered 1970-71)
Students do individual or group projects in Biometeorology. *W. G. Wellington.*
(May not be combined with †ZOO 425 in any degree programme.)
Prerequisite: ZOO 223
Co-requisite: ZOO 476F

ZOO 478F **Statistical Ecology** 2L,2P
Basic principles and practice of sampling in ecology; estimation of population numbers, rates of mortality and recruitment; life tables; spatial distribution of species and

measurement of species association; some theory of search. *J. E. Paloheimo.*
(May not be combined with †ZOO 435 in any degree programme.)
Prerequisite: Courses in Calculus, Statistics and Ecology

ZOO 479S **Models in Ecology** 2L,2P
Mathematical and computer models used in population and ecosystem dynamics and in their component processes. *J. E. Paloheimo.*
(May not be combined with †ZOO 435 in any degree programme.)
Prerequisite: Courses in Calculus, Statistics and Ecology

ZOO 480Y **Ecological Seminar** 2T
A seminar course with topics in diverse aspects of ecology. Specific topics arranged between staff and students. *J. B. Falls.*
Prerequisite: ZOO 223

ZOO 497Y **Project in Zoology** Arranged
A research project in some field of Zoology, requiring the consent of a professor to supervise the project. Recommended for fourth year students.

ZOO 498 **Project in Zoology** Arranged
A research project in some field of Zoology, requiring the consent of a professor to supervise the project. Recommended for fourth year students.

UNIVERSITY AND FACULTY OFFICERS

(PARTIAL LISTING)

1969 - 1970

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Executive Vice-President (Academic) and Provost ..... J. H. Sword, M.A.

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Director of Athletics and Physical Education —Men ..... W. A. Stevens, B.S.
Director of Athletics and Physical Education —Women ..... Miss A. Hewett, B.Ed., P.E.
Comptroller ..... J. H. Lee, C.A.

TEACHING STAFF

1969-70

ANATOMY

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Lecturer: W. O'Grady, M.A.

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Visiting Professors: W. Berns, B.Sc., M.A., Ph.D.; L. Goodrich, A.M., Ph.D.; J. W. Holmes, M.A.

Research Professor: I. Schiffer, M.D.

Lecturers: K. Bryden, M.A.(Oxon.); D. H. Gardner, M.A.; Miss C. Hughes, M.A.; P. Silcox, M.A.

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PSYCHOLOGY

Professor Emeritus: E. A. Bott, O.B.E., B.A., D.Sc.
Professor and Chairman of the Department: G. E. Macdonald, B.Ed., M.A., Ph.D.
Professors: D. E. Berlyne, M.A., Ph.D.; B. B. Murdock, Jr., B.A., Ph.D.; C. R. Myers, M.A., Ph.D.; J. C. Ogilvie, B.Sc., Ph.D.; E. Tulving, M.A., Ph.D.
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Visiting Associate Professor: J. Allison, B.A., Ph.D.
Assistant Professors: T. Alloway, B.A., Ph.D.; G. B. Biederman, B.A., Ph.D.; B. Bragg, B.A., Ph.D.; J. A. Cheyne, B.A., Ph.D.; Miss L. de Toledo, B.A., Ph.D.; A. N. Doob, B.A., Ph.D.; M. C. Efran, B.A., Ph.D.; G. E. Finley, B.A., Ph.D.; J. Graef, B.A., Ph.D.; T. Grusec, B.A., Ph.D.; L. Krames, B.A., Ph.D.; R. S. Lockhart, B.A., Ph.D.; Miss P. Pliner, B.A., Ph.D.; P. A. Reich, B.A., Ph.D.; W. A. Roberts, B.A., Ph.D.; A. S. Ross, M.A., Ph.D.; J. Satterberg, B.A., Ph.D.; Mrs. M. C. Smith, B.A., Ph.D.
Visiting Assistant Professor: P. E. McGhee, B.A., Ph.D.
Lecturer: D. M. Keller, B.A.
Special Lecturers (part-time): R. Cohen, B.A., Ph.D.; A. Dalton, B.Sc., B.A., Ph.D.; D. Graham, B.A., Ph.D.; Miss I. Koenig, B.A., Ph.D.; J. A. Long, M.A., Ph.D.; S. Page, B.A.; D. Paitich, M.A., Ph.D.; Miss N. Parker, M.A., Miss J. Preston, M.A., Ph.D.; R. W. Ross, M.A., C. D. Webster, M.A., Ph.D., Mrs. P. Westcott, B.A., Ph.D.

RELIGIOUS STUDIES

VICTORIA COLLEGE:
Professor and Chairman of the Department: Rev. K. J. Joblin, B.A., B.D., Th.M., D.D.
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TRINITY COLLEGE:
Professor and Chairman of the Department: G. A. B. Watson, M.A., S.T.B.
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Special Lecturers: Rev. Canon H. W. Buchner, B.A., L.Th., S.T.M., D.D.; Rev. E. R. Fairweather, M.A., B.D., Th.D.; Rev. E. S. Gale, B.A., L.Th., S.T.B.; Rev. J. C. Hurd, B.S., B.D., M.A., Ph.D.
Professor (By cross-appointment): A. K. Warder, B.A., Ph.D.
Visiting Associate Professors: G. Bhattacharya, M.A., D.Phil.; J. D. Dhirasekera, B.A., Ph.D.
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ST.MICHAEL'S COLLEGE:
Professor and Chairman of the Department: Rev. A. G. Gibson, Ph.L., S.T.D.

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SOCIOLOGY

Professor and Chairman of the Department: P. J. Giffen, M.A.
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Special Lecturer: B. Baldus, M.A.
Lecturers: A. M. Bennett, M.A., R. W. Burnside, M.A.; S. Cook, M.A.; M. Cooper, B.A.; M. E. Hanna, M.A.; J. Joyner, M.A.; A. T. R. Powell, M.A.; R. O'Toole, M.A.; J. Wayne, M.A.

ZOOLOGY

Professors Emeriti: A. F. Coventry, B.A.; E. H. Craigie, B.A., Ph.D., F.R.S.C.; Miss V. E. Englebert, M.S.A., Ph.D.; A. G. Huntsman, B.A., M.D.; Mrs. N. F. Walker, B.A., Ph.D., F.R.S.C. (obiit).
Professor and Chairman of the Department: D. A. Chant, M.A., Ph.D.
Professor and Associate Chairman of the Department: R. R. Langford, B.Sc., Ph.D.
Professors: C. E. Atwood, M.S.A., Ph.D.; R. O. Brinkhurst, B.Sc., Ph.D.; L. Butler, M.S.A., Ph.D.; G. M. Clark, M.Sc., Ph.D.; A. M. Fallis, B.A., Ph.D.; J. B. Falls, B.A., Ph.D.; K. C. Fisher, M.A., Ph.D., D.Sc., *(obiit.);* R. S. Freeman, M.A., Ph.D.; W. C. Friend, Ph.D.; F. E. J. Fry, M.B.E.,

M.A., Ph.D., F.R.S.C.; F. P. Ide, M.A., Ph.D.; R. L. Peterson, M.A., Ph.D.; F. H. Rigler, M.A., Ph.D.; W. B. Scott, M.A., Ph.D.; F. A. Urquhart, M.A., Ph.D.; G. B. Wiggins, M.A., Ph.D.; A. M. Zimmerman, B.A., M.S., Ph.D.

Associate Professors: H. L. Atwood, M.A., Ph.D.; J. C. Barlow, M.A., Ph.D.; J. Berger, M.Sc., Ph.D.; D. G. Butler, M.Sc., Ph.D.; I. Campbell, M.A., Ph.D.; C. S. Churcher, M.Sc., Ph.D.; E. J. Crossman, M.A., Ph.D.; M. F. Filosa, M.S., Ph.D.; H. H. Harvey, M.Sc., Ph.D.; R. A. Liversage, M.A., Ph.D.; J. Machin, B.Sc., Ph.D.; Y. Masui, M.Sc., Ph.D.; D. F. Mettrick, B.Sc., Ph.D.; N. Mrosovsky, B.A., Ph.D.; G. M. Neal, M.A.(obiit.); J. Paloheimo, M.A., Ph.D.; T. S. Parsons, M.A., Ph.D.; D. H. Pimlott, M.Sc., Ph.D.; P. J. Pointing, M.A., Ph.D.; T. E. Reed, B.A., Ph.D.; H. A. Regier, M.A., Ph.D.; Miss B. I. Roots, B.Sc., Ph.D.; Miss C. M. Sullivan, M.Sc., Ph.D.; I. Tallan, B.S., Ph.D.; J. R. Tamsitt, M.A., Ph.D.; Mrs. M. Thompson, M.A., Ph.D.

Assistant Professors: A. G. Bell, M.A., M.D.; D. W. Dunham, B.S., Ph.D.; G. A. Knerer, M.A., Ph.D.; Miss J. E. Lai-Fook, B.Sc., Ph.D.; M. Miyagi, B.A., Ph.D.; G. K. Morris, M.S., Ph.D.; R. C. Plowright, M.A., Ph.D.; B. Pomeranz, M.D., Ph.D.; D. M. Power, M.A., Ph.D.; J. J. B. Smith, B.Sc., Ph.D.; G. M. Telford, B.Sc., Ph.D.; K. A. Wright, M.A., Ph.D.

Assistant Professor (part-time): Mrs. A. J. Hogan, Ph.D.

Lecturers: R. I. C. Hansell, B.Sc., Ph.D.; M. E. Hatton, B.A., Ph.D.; R. M. Roy, M.A., Ph.D.; Mrs. B. M. Solandt, M.A.

Special Lecturers: Miss A. M. McGregor, Mrs. M. Parsons, M.A., Ph.D.

Instructor and Bibliographer: J. M. Speirs, Ph.D.

SCARBOROUGH COLLEGE

(All members of the Scarborough College teaching staff hold appointments in University or University College departments, the name of the department being shown in brackets.)

Professors: V. W. Bladen, M.A., LL.D., F.R.S.C., D.Litt. (Political Economy); N. E. Collinge, M.A., Ph.D. (Classics); S. J. Colman, M.A. (Political Economy); R. L. James, M.A., Ph.D. (Sociology); A. Kruger, B.A., Ph.D. (Political Economy); J. M. R. Margeson, M.A., Ph.D. (English); J. S. Moir, M.A., Ph.D. (History); A. F. W. Plumptre, C.B.E., M.A. (Political Economy); F. A. Urquhart, M.A., Ph.D. (Zoology).

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Visiting Associate Professor: K. E. Francis, M.S., Ph.D. (Geography).

Assistant Professors: Miss W. J. Bancroft, M.A., Ph.D. (French); J. W. Batchelor, B.A., Ph.D. (French); G. B. Biederman, B.S., Ph.D. (Psychology); R. S. Blair, M.A., Ph.D. (Political Science); Mrs. H. K. Botta, M.A., Ph.D. (Mathematics); R. B. Caton, B.A., Ph.D. (Chemistry); P. Cave, B.A., D.Phil. (Geography); J. A. Cheyne, M.A., Ph.D. (Psychology); J. H. Corbett, M.A., Ph.D. (Classics); Mrs. J. A. Curtis, M.A., Phil.M. (French); R. E. Dengler, B.Sc., Ph.D. (Botany); P. S. Derow, B.A. (Classics); W. M. Dick, M.A., Ph.D. (History); L. E. Doucette, B.A., Ph.D. (French);

M. G. Efran, B.A., Ph.D. (Psychology); A. Franceschetti, Dott. in Lett., Ph.D. (Italian); W. C. Graham, M.A., Ph.D. (Philosophy); J. N. Grant, M.A., (Classics); B. Greenwood, B.Sc. (Geography); R. O. Harris, B.Sc., M.A., Ph.D. (Chemistry); Mrs. F. Hawkins, M.A., Ph.D. (Political Economy); Mrs. M. E. Irwin, B.A., Ph.D. (Classics); Miss C. G. Johnston, B.A., Ph.D. (Fine Art); J. Kay, M.A., Ph.D. (English); J. P. B. Kenyon, M.A., Ph.D. (History); V. V. Kingsley, M.Sc., Ph.D. (Microbiology); M. C. Kirkham, B.A., M.Phil. (English); W. J. Kirkness, M.A., Ph.D. (French); R. Knight, M.A., Ph.D. (Anthropology); P. P. Kronsberg, M.Sc., Ph.D. (Astronomy) J. A. Lee, M.A. (Sociology); P. R. Leon, M.A., Ph.D. (Spanish); T. H. Liu, M.A., Ph.D. (Political Economy); T. R. Lynch, B.Sc., M.A., Ph.D. (Chemistry); M. R. Marrus, M.A., Ph.D. (History); I. R. McDonald, B.A., Ph.D. (Classics); M. Miyagi, B.A., Ph.D. (Zoology); D. L. Mosher, B.A., Ph.D. (Philosophy); P. J. O'Donnell, B.Sc., Ph.D. (Physics); H. H. H. Ohlendorf, AıM., Ph.D. (German); A. J. G. Patenall, M.A., Ph.D. (English); J. L. Pearl, M.A., Ph.D. (History); J. M. Perz, M.A.Sc., Ph.D. (Physics); J. Riddick, B.Sc., Ph.D. (Chemistry); D. Rifat, D.A. (Fine Art); A. S. Ross, M.A., Ph.D. (Psychology); G. Scavizzi, Ph.D. (Fine Art); H. B. Schroeder, B.A., Ph.D. (Anthropology); E. G. Schwimmer, B.A., Ph.D. (Anthropology); R. Skyrme, M.A., M.Litt. Ph.D. (Spanish); R. E. Stren, M.A., Ph.D. (Political Economy); R. W. Shirley, M.A., Ph.D. (Anthropology); G. N. Smith, Jr., B.A., Ph.D. (Biology); Mrs. M. C. Smith, M.S., Ph.D. (Psychology); V. Soots, M.S., Ph.D. (Physics); Mrs. C. Sparling, B.Sc., Ph.D. (Botany); Mrs. J. M. Vastokas, M.A., Ph.D. (Fine Art); D. P. Wakfer, B.Sc., M.A. (Mathematics); A. Walker, B.Sc., Ph.D. (Chemistry); M. B. Walker, B.Eng., D.Phil. (Physics); G. F. Will, M.A., Ph.D. (Political Economy); H. Wittmann, Abitur., M.A., Ph.D. (German); K. L. Wyman, M.A. (Political Economy); J. H. Youson, B.A., M.Sc., Ph.D. (Zoology).

Lecturers: Miss B. R. Aarons, M.A. (Philosophy); Mrs. J. K. Bartha, M.A. (Spanish); P. V. Bishop, M.A., Ph.D. (Political Economy); M. W. Bucovetsky, M.A. (Political Economy); M. F. Bunce, B.A. (Geography); E. Costa, M.A., Phil.M. (Italian); Miss J. Esberey, (Political Economy); P. W. Gooch, M.A. (Philosophy); M. E. Hanna, M.A. (Sociology); Miss M. J. Maillard, M.A., Phil.M. (Spanish); Mrs. B. S. Martineau, M.A. (English); J. A. Michielsen, M.A. (German); A. E. Oldershaw, B.Sc., Ph.D. (Geology); R. O'Toole, M.A., (Sociology); C. V. Ponomareff, M.A. (Russian); R. D. Rodgers, M.A. (English); Mrs. J. Romney, Lic eL., Ag. de L'U D.E.S. (French); Miss G. Sanguinette, M.A. (Italian); Miss M. Schaefer, M.A. (Fine Art); N. N. Shneidman, M.P.H.E., M.A., Dip.R.E.E.S. (Russian); A. N. Sheps, M.A. (History); H. S. Swain, M.A., Ph.D. (Geography); M. Tait, M.A. (English); A. C. Thomas, M.A. (English); Mrs. E. P. Vicari, M.A. (English); Mrs. S. J. Zelonka, M.A., Ph.D. (Slavic).

Lecturers (part-time): G. S. Brownlee, M.Sc., Ph.D.; T. I. Eliades, B.Sc., Ph.D.

Special Lecturers: J. K. Spicer, B.A., Ph.D., Dipl.D'Et.Pol. (Political Economy); M. N. Shapiro, B. Com. (Political Economy); R. I. Wolfe, M.A., Ph.D. (Geography).

ERINDALE COLLEGE

(All members of the Erindale College teaching staff hold appointments in University or University College departments).

Professors: J. Barros, A.B., M.I.A., Ph.D. (Political Science); W. J. Huggett, M.A., Ph.D. (Philosophy); W. E. Kalbach, M.A., Ph.D. (Sociology); P. F. Maycock, B.A., M.Sc., Ph.D. (Botany); D. F. Putnam, B.S.A., Ph.D. (Geography); S. P. Rosenbaum, M.A., Ph.D. (English); H. W. Taylor, M.Sc., Ph.D. (Physics); W. L. Thomas, M.A., Ph.D. (Geography); J. T. Wilson, O.B.E., Ph.D., Sc.D., LL.D., D.Sc., F.R.S., F.R.S.C. (Physics).

Associate Professors: J. F. Burke, M.A., Ph.D. (Spanish); J. V. Canfield, M.A., Ph.D. (Philosophy); Mrs. C. Cloutier–Wojciechowska, L.ès L., D.E.S., D.de l'U. (French); L. J. Elmer, B.A., S.T.B.

S.T.D. (Religious Studies); P. H. H. Fantham, M.A., D.Phil. (Mathematics); J. E. LeBel, M.A., Ph.D. (Mathematics); G. F. McGuigan, M.A., Sc.Soc.D. (Economics); P. P. M. Meincke, B.Sc., M.A., Ph.D. (Physics); A. Mohr, A.B., Ph.D. (Anthropology); P. J. Pointing, B.Sc., Ph.D. (Zoology); J. J. Rae, M.A., Ph.D. (Chemistry); E. A. Robinson, B.Sc., Ph.D., D.Sc. (Chemistry); Miss B. I. Roots, B.Sc., Ph.D. (Zoology); I. M. Spigel, M.A., Ph.D. (Psychology); D. C. Tozer, B.Sc., Ph.D. (Physics); S. M. Trott, B.Sc., M.A. Ph.D. (Mathematics).

Assistant Professors: T. H. Adamowski, M.A., Ph.D. (English); T. M. Alloway, M.A., Ph.D. (Psychology); R. L. Beck, M.A. (Classics); T. Bloom, B.Sc., M.A., Ph.D. (Mathematics); Miss C. E. Cassin, M.A., Ph.D., (Philosophy); D. R. Clark, B.Sc., Ph.D. (Chemistry); T. G. Elliott, B.A. (Classics); G. B. A. France, M.A. (Economics); D. Gibo, B.A., Ph.D. (Zoology); M. J. Hare, B.Com., C.A., (Economics); J. R. Harle, M.Sc., Ph.D. (Botany); O. Hegyi, M.A., Ph.D. (Spanish); K. Hewitt, M.A., Ph.D. (Geography); D. B. Hill, M.A., Ph.D. (English); Mrs. S. S. Hole, M.A., Ph.D. (English); A. A. Kontos, M.A., Ph.D. (Political Science); B. Kovrig, M.A., Ph.D. (Political Science); L. Krames, M.A., Ph.D. (Psychology); D. I. Lancashire, M.A., Ph.D. (English); M. Mather, B.A., Ph.D. (Mathematics); G. K. Morris, B.S.A., M.A., Ph.D. (Zoology); D. P. Morton, M.A., Ph.D. (History); E. G. Neglia, M.A., Ph.D. (Spanish); G. A. Ozin, B.Sc., D.Phil. (Chemistry); J. P. Payne, M.A. (German); J. R. Percy, M.Sc., Ph.D. (Astronomy); Miss P. L. Pliner, B.S. (Psychology); R. C. Plowright, M.A., Ph.D. (Zoology); D. C. D. Pocock, M.A., Ph.D. (Geography); R. Racine, M.A., Ph.D. (Astronomy); P. V. Rangnekar, M.Sc., Ph.D. (Botany); Miss C. I. Reid, B.A., Ph.D. (Classics); A. Rosenthal, M.A., Ph.D. (Classics); R. Rower, M.A., Ph.D. (English); Mrs. M. Scarth, M.A. (Spanish); Miss B. A. Sigmon, B.A., M.S., Ph.D. (Anthropology); A. L. Stein, M.A., Ph.D. (French); I. W. J. Still, B.Sc., Ph.D. (Chemistry); F. D. Tall, A.B., Ph.D. (Mathematics); G. R. Thaler, M.Sc. (Botany); D. H. Watkinson, M.Sc., Ph.D. (Geology); Miss J. R. Webster, M.A., Ph.D. (Spanish); H. H. Weinberg, M.A., Ph.D. (French); W. B. White, A.B., M.S., Ph.D. (History); S. S. Wong. M.S., Ph.D. (Physics).

Lecturers: B. W. Bartlett, B.P.H.E. (Physical Education); A. M. Bennett, M.A. (Sociology); A. R. Byrne, M.A. (Geography); Mrs. G. Chesneau, L. ès L., C.A.P.E.S., D.E.S. (French); Mrs. M. Cooper, B.A. (Sociology); M. Dafoe, M.A. (History); P. R. Findlay, M.A. (French); Miss P. Frohman, M.A. (Italian); D. Gardner, M.A. (Political Science); A. Guha, M.Sc., Ph.D. (Microbiology); D. Keller, B.A. (Psychology); M. Levene, M.A. (English); F. B. Mayer, B.Com. (Economics); L. McCormick, M.A., (Italian); W. Meyer-Erlach, B.A. (German); A. T. R. Powell, M.A. (Sociology); Mrs. M. Raine, M.A. (French); M. Schiller, B.A. (Philosophy); N. Shneidman, M.P.H.E., M.A. (Slavic); D. A. Trott, M.A. (French); Mrs. R. M. Vanderburgh, M.A. (Anthropology); M. J. Wood, B.A., Ph.D. (Physics); J. Yashinsky, M.A. (French).

Sepcial Lecturers: J. F. Emerson, B.Sc.)Physics); P. Z. R. Finkle, M.A., LL.D. (Political Science); T. A. Heinrichs, M.A. (Political Science); L. Johnston, B.Sc., Ph.D. (Chemistry); J. H. MacLachlan, B.A.Sc., Ed.M. (History); A. McDougall, M.A. (Political Science); W. Reed, M.Sc., Ph.D. (Chemistry); D. J. Snodin, B.Sc., A.R.S.C., Ph.D. (Chemistry); S. P. Tyfield, B.Sc., Ph.D. (Chemistry).

APPLICATION AND ADMISSION

Full details of the University of Toronto undergraduate admission requirements, including certificates other than Ontario Grade 13, and application procedures are contained in the Undergraduate Admission Bulletin issued annually. Copies of this publication and application forms are available in all Ontario secondary schools or may be obtained on request from the Director of Admissions, Simcoe Hall, University of Toronto, Toronto 181. Application forms must be completed and returned to the Office of Admissions *as soon as possible and not later than June 1.*

Candidates are advised to make early application. Well-qualified students currently in Ontario Grade 13 who apply before April 1 may receive admission on the basis of the High School record and other information. Detailed information with respect to this procedure is mailed to every secondary school in Ontario by the Director of Admissions.

GENERAL ADMISSION STANDARDS

All students applying for entry to First Year in 1970 must have standing with an average of at least 60% in Ontario Grade 13 or equivalent subjects which must include at least two of English, French or another language, Mathematics A or B, and additional subjects for a total of seven credits.

Effective 1971, entrance to the First Year will be offered to candidates from Ontario secondary schools who demonstrate good standing, based upon the following evidence:

(1) Completion of secondary school studies, including a full year of academic work at the Grade 13 level.
(2) A recommendation by the secondary school last attended regarding fitness for university studies.
(3) A complete academic report for the three final years of secondary school.
(4) Results of standardized tests offered by the Service for Admission to College and University.

Throughout the secondary school years students should study in as many of the following areas as possible: English, French and other languages, Mathematics, Sciences, Social Studies. Students should also consider carefully what aspects of their projected university work will entail prerequisite study.

Candidates are advised to include in their Grade 13 programme at least two of: English, French or another language, Mathematics, Science. Certain university courses in Mathematics, Science and Languages have Grade 13 prerequisites listed in the calendar.

Applicants should note that the possession of the minimum published requirements does not ensure admission because the number of places available in the Faculty is limited, and selection must be made from the applicants for these places.

Candidates offering Senior Matriculation programmes from provinces other than Ontario must offer at least five subjects and satisfy the subject requirements specified for Ontario Grade 13.

Under the University's admission practices, the school record of the applicant, the confidential report of the school and other tests of the student's ability that are available are considered. The length of time taken and number of sittings at examinations to obtain the admission requirements also are taken into account.

Candidates from Ontario are strongly recommended to have Grade 12 standing in at least six subjects (excluding Physical Education). The subjects chosen should include at least five of the following subjects and at least one subject from each of the four groups:

(i) English
(ii) French; German; Greek; Italian; Latin; Russian; Spanish
(iii) Geography (Parts 1 and 2); History (Parts 1 and 2)
(iv) Mathematics (Parts 1 and 2); Science (Physics and Chemistry)

ADMISSION TO ADVANCED STANDING

An undergraduate of another university or of another faculty in this University may be admitted to advanced standing on such conditions as may be prescribed and must apply to the Office of Admissions before *June 1.* Advanced standing credit is awarded to students who at another university or faculty have taken work which is equivalent in content to work which would have been taken had they been enrolled in this Faculty. Each application is considered individually in terms of the student's previous record and the courses offered in the Faculty.

No applicant will be eligible for advanced standing from another university unless he has obtained exceptionally high standing in his academic programme at the other institution. High standing will also be an important factor in considering applicants for admission to advanced standing from other divisions of this university.

An applicant for admission to advanced standing must submit, with his application for admission, the Ontario Grade 13 certificate or equivalent; and an official transcript of his record in the university or faculty from which he wishes to transfer, showing the specific courses which he has completed with his standing in each.

ENGLISH FACILITY REQUIREMENTS

All applicants are required to submit evidence acceptable to the University of Toronto of facility in English. Candidates whose mother tongue is not English may be required to meet an appropriate standard in a recognized English facility test.

Information about writing the tests may be obtained from the Office of Admissions, Simcoe Hall, University of Toronto, Toronto 181.

The University is prepared to consider other evidence of English facility which may be submitted for evaluation to the Office of Admissions.

MATURE STUDENTS

A candidate of mature age (25 years or older on October 1) who has lived in Ontario for a minimum period of one year and is normally resident in Ontario, may request special consideration for admission as a regular student proceeding towards a degree, if he has a good academic record including a minimum of 66% in at least one Grade 13 subject and obtains standing in such other tests as may be required.

Effective 1971, a candidate of mature age (24 years of age or older on October 1st of the Winter Session or July 15th of the Summer Session) who has lived in Ontario for a minimum period of one year and is normally a resident of Ontario, may request special consideration for admission to the Faculty if he has obtained high standing in at least one Pre-University course offered through the Division of University Extension (or an equivalent course) and obtains standing in such other tests as may be required. His previous secondary school record will also be taken into account.

Because the number of places within the Faculty is severely limited, selection must be on a competitive basis.

A birth certificate must be submitted by a candidate seeking admission as a mature student.

REGISTRATION AND FEES

REGISTRATION AND ENROLMENT

Every student in attendance proceeding to the degree in the Faculty of Arts and Science is required to register in one of University College, Victoria College, Trinity College, St. Michael's College, New College, Innis College, Scarborough College, Erindale College, unless proceeding towards a degree in the Division of University Extension. Information regarding the relation of the Colleges to the University will be found under the heading "The Faculty of Arts and Science and Its Colleges."

Registration information will be mailed to each student early in the summer. A student "registers" for a programme of studies in the Faculty of Arts and Science through the Registrar of his College. At that time he is required to have in his possession:

(1) His Social Insurance Number.
(2) His letter of admission, if a new student.
(3) His receipt for the payment of at least the first instalment of fees. (This is obtained from the Office of the Comptroller, 215 Huron Street, or, for students in the Federated Colleges, from the College Bursar.)

DATES FOR REGISTRATION

Registration in the colleges on the St. George campus must be carried out as follows:

FIRST YEAR

Thursday, September 10, 9:00 a.m. to 12:00 noon–
A–F inclusive from Metropolitan Toronto.
Thursday, September 10, 2:00 p.m. to 4:30 p.m.–
G–K inclusive from Metropolitan Toronto.
Friday, September 11, 9:00 a.m. to 12:00 noon–
L–R inclusive from Metropolitan Toronto.
Friday, September 11, 2:00 p.m. to 4:30 p.m.–
S–Z inclusive from Metropolitan Toronto.
Monday, September 14, 9:00 a.m. to 12:00 noon–
A–Z inclusive from outside Metropolitan Toronto.

SECOND YEAR

Monday,	September 14,	2:00 p.m. to 4:30 p.m.	–	A–C inclusive.
Tuesday,	September 15,	9:00 a.m. to 12:00 noon	–	D- H inclusive.
Tuesday,	September 15,	2:00 p.m. to 4:30 p.m.	–	I–Maz (incl. Mac)
Wednesday,	September 16,	9:00 a.m. to 12:00 noon	–	Mc–Sh inclusive.
Wesnesday,	September 16,	2:00 p.m. to 4:30 p.m.	–	Si–Z inclusive.

THIRD YEAR

Thursday,	September 17,	9:00 a.m. to 12:00 noon	–	A–F inclusive.
Thursday,	September 17,	2:00 p.m. to 4:30 p.m.	–	G–K inclusive.
Friday,	September 18,	9:00 a.m. to 12:00 noon	–	L–R inclusive.
Friday,	September 18,	2:00 p.m. to 4:30 p.m.	–	S–Z inclusive.

FOURTH YEAR

Saturday,	September 19,	9:00 a.m. to 12:30 p.m.	–	A–Z inclusive.

SPECIAL STUDENTS

Friday,	September 18,	9:00 a.m. to 12:00 noon	–	A–L inclusive.
Friday,	September 18,	2:00 p.m. to 4:30 p.m.	–	M–Z inclusive.

(At the Faculty Office, Sidney Smith Hall.)

REGISTRATION IN OTHER COLLEGES

Students admitted to Scarborough College or Erindale College, or to the Division of University Extension should consult the appropriate calendars or other publications to ascertain the times and places of registration.

LATE REGISTRATION

After September 20, no student may register and enrol except by petition. The Council may refuse permission to register late. The late penalty will be enforced, and every petition for late registration and enrolment must be accompanied by the late registration fee. Petitions for the refund of this fee must be submitted by October 15, with a receipt indicating the amount paid.

CHANGE OF SUBJECT OR COURSE

Students who wish to make a change in their programme after registration must consult their College Registrar. All requests should be made as early in the session as possible, preferably before October 15. Those submitted after that date will be granted only in the most exceptional circumstances. No second-term course may be begun after February 1st.

CONFIRMATION OF PROGRAMME

All students in day classes must confirm their programme of studies during the month of November prior to November 20th and verify the address to which statements of examination results are to be mailed. This procedure is essential in order to ensure accurate records and so that examination arrangements may be made. Regular Students confirm their programmes at the office of their College Registrar; Special Students only at the office of the Secretary of the Faculty.

WITHDRAWAL

A student who wishes to withdraw from a course or from his entire programme of studies during the session must do so through his College Registrar. This must be done prior to November 20, if the course is offered only in the First Term, or prior to February 15 in all other cases, or he will be considered to have failed.

The College Registrar is unable to authorize any refund of fees until he receives from the student written confirmation of his intention to withdraw.

SPECIAL STUDENTS IN DAY CLASSES

A candidate for admission as a Special Student (one not proceeding to a degree in this Faculty) must apply to the Director of Admissions, Simcoe Hall, University of Toronto for forms of application for admission and return them before August 1st for the Winter Session commencing in September. He should apply for day classes only if intending to register in a full-time programme of four or five courses. Part-time Special Students (i.e., those taking three or fewer courses in a session) will register in the Division of University Extension.

Each application for admission is considered individually in terms of the student's previous academic record. Transcripts of record from other universities or faculties will therefore be required.

Unless clearing a condition, courses taken as a Special Student may not be credited towards a degree offered by this Faculty. Students taking courses for credit or admission elsewhere are advised to confirm with the institution concerned before registering. Courses should be selected only in consultation with the members of the academic staff responsible for Special Students in each University or College department in which the student wishes to enrol. Registration instructions will be sent to applicants on admission.

Special Students must obtain standing in any course in which they are enrolled, before they may enrol in an advanced course in the same subject.

Special Students who do not write the annual examinations, or who withdraw from a First-term course after November 20 or from any other course after February 15, except for medical or similar reasons, for which proof must be submitted, will be considered for purposes of re-enrolment to have failed to obtain standing in the course.

EVENING CLASSES AND SUMMER SESSIONS

Students seeking admission to evening classes in the Winter Session and to Summer Sessions (day or evening) as Regular or Special Students should consult the calendar entitled "Degree Programmes in Extension" available from the Office of the Director of University Extension, 84 Queen's Park, Toronto 181, Ontario. Registration instructions will be sent to those admitted to each session.

FEES

A student who desires to enrol in the Faculty of Arts and Science is required to pay at least the First Term instalment of fees on or before the opening date of the session, and before applying to his College Registrar for his card of admission to lectures. The amount of the First Term instalment of fees or of the total fee for the session may be ascertained from Schedules A, B, C, and D on the following pages.

The Second Term instalment of fees, if not already paid, is payable on or before January 20. After this date an additional charge of $3 per month, or portion thereof (not exceeding $10), will be imposed until the whole amount is paid. All fees for the session must have been paid in full before the student can receive his number for the annual examinations. In order to avoid delay in registration at the opening of the session it is recommended that the First Term instalment of fees be forwarded by mail as early as possible.

Late Registration Fee. Any student who registers after the last date for normal registration in his or her own faculty or school is required to pay a late registration fee of $10 plus $1 for each day of delay to a maximum of $20.

All payments submitted to the office of the Comptroller must clearly indicate student number and name. Cheques must be payable in Canadian funds.

Adjustments for withdrawals may be made up to the 24th week, from the opening date.

Fees are subject to change by the Board of Governors.

I. UNIVERSITY COLLEGE, NEW COLLEGE, INNIS COLLEGE, SCARBOROUGH COLLEGE, ERINDALE COLLEGE

Fees of students enrolled in University College, New College, Innis College, Scarborough College and Erindale College are payable at the office of the Comptroller, St. George Campus. Cheques or money orders in payment of these fees should be made payable to the University of Toronto.

Each undergraduate enrolled in one of these colleges must pay annual fees according to Schedule A below if proceeding to the degree of Bachelor of Arts or Bachelor of Science, or according to Schedule B if proceeding to the degree of Bachelor of Commerce.

The total fee in each case is made up of the academic fee and incidental fees, both University and College; all incidental fees are payable in the First Term instalment.

N.B. Students of other Faculties and Schools enrolled in New College or Innis College pay a College Fee of $15 in addition to the regular fees of their Faculty or School.

SCHEDULE A–BACHELOR OF ARTS AND BACHELOR OF SCIENCE

College	*Academic Fee	†Incidental Fees	Total Fee (if paid in one instalment)	First Term Instalment	Second Term Instalment 20 January
University College					
Men	$470	$67	$537	$302	$238
Women	470	47	517	282	238
New and Innis Colleges					
Men	470	65	535	300	238
Women	470	45	515	280	238
Scarborough and Erindale Colleges					
Men	470	50	520	285	238
Women	470	44	514	279	238

*The Academic Fee includes the following fees: Tuition ($417); Library and Laboratory; Examination; Degree; Physical Education.

†These Incidental Fees include the following fees: for men–Hart House; Students' Administrative Council; Athletic; Health Service: Literary and Athletic Society. For women–Students' Administrative Council; Athletic; Health Service; Women's Union; and Women's Undergraduate Association. At Scarborough College and Erindale College Incidental Fees will include fees for the Scarborough or Erindale College Students' Society in lieu of the Literary and Athletic Society, Women's Union and Women's Undergraduate Association.

SCHEDULE B–BACHELOR OF COMMERCE

College	*Academic Fee	†Incidental Fees	Total Fee (if paid in one instalment)	First Term Instalment	Second Term Instalment 20 January
University College					
Men					
Women					
New and Innis Colleges					
Men					
Women					

Total fee to be set.
Method of payment to be announced.

*The Academic Fee includes the following fees: Tuition ($437); Library and Laboratory; Examination; Degree; Physical Education.

†These Incidental Fees include the following fees: For men–Hart House; Students' Administrative Council; Athletic; Health Service; Literary and Athletic Society. For women–Students' Administrative Council; Athletic; Health Service; Women's Union; and Women's Undergraduate Association.

II. VICTORIA COLLEGE, TRINITY COLLEGE, ST. MICHAEL'S COLLEGE

Each undergraduate enrolled in any one of Victoria College, Trinity College or St. Michael's College must pay annual fees according to Schedule C below if proceeding to the degree of Bachelor of Arts or Bachelor of Science, or according to Schedule D if proceeding to the degree of Bachelor of Commerce. All fees are payable to the Bursar of the College concerned. Cheques in payment of these fees should be made payable to the College concerned.

All incidental fees, whether University or College, are payable through the College Bursar in the First Term instalment.

SCHEDULE C–BACHELOR OF ARTS
AND BACHELOR OF SCIENCE
N.B. All fees payable through the College Bursar

College	College Tuition Fee		College Incidental Fees	First Term Instalment	Second Term Instalment	University Academic and Incidental Fees
			Men			
Victoria	$417	V	$46	$255	$211	$110
Trinity	417	T	98	307	211	110
St. Michael's	417	M	54	263	211	110
			Women			
Victoria	417	V	46	255	211	85
Trinity	417	T	87	296	211	85
St. Michael's	417	M	54	263	211	85

The Academic Fee includes the following fees: Library and Laboratory; Examination; Degree; Physical Education. The Incidental Fees include the following: For men–Hart House; Students' Administrative Council; Athletic; Health Service. For women–Students' Administrative Council; Athletic; Health Service.

V–Include Victoria College Union; Athletic Fees; Wymilwood Student Union; Library.

T–Include College Amenities Fee; Student Societies; meal tickets.

M–Include Student Council Fee, Student Centre Fee; Library Fee.

SCHEDULE D–BACHELOR OF COMMERCE

N.B. All fees payable through the College Bursar

College	College Fee (if paid in one instalment)	College Incidental Fees	First Term Instalment	Second Term Instalment	*University Fee (if paid in one instalment	First Term Instalment	Second Term Instalment
			Men				
Victoria, Trinity, St. Michael's	Total fee to be set. Method of payment to be announced.						
			Women				
Victoria, Trinity, St. Michael's	Total fee to be set. Method of payment to be announced.						

*This University Fee includes the following fees: For all students–Library; Examination; Degree; Physical Education. For men–part of composite Tuition; Hart House; Students' Administrative Council; Athletic; Health Service. For women–part of composite Tuition; Students' Administrative Council; Athletic; Health Service.

V–Include Victoria College Union; Athletic Fees; Wymilwood Student Union; Library.

T–Include College Amenities Fee; Student Societies; meal tickets.

M–Include Student Council Fee; Student Centre Fee; Library Fee.

III. UNIVERSITY EXTENSION

Each student enrolled in courses offered by the Faculty of Arts and Science through the Division of University Extension must pay fees to the office of the Comptroller according to the following schedule:

(a) Fees payable at the time of registration:

Academic fee–per subject $95

A.P.U.D.S. fee (per session) . . . . . $ 2

(maximum per year) $ 4

(b) Fees payable on or before December 1:

Supplemental examination fee. One subject $10

Each additional subject . . . . . $ 5

(c) Fees payable at the time of registration or on the opening day of the session by students who attend the Summer Session:

Summer activity fee (day) . . . . . $ 5

Summer activity fee (evening). . . . . $ 2

IV. FEES FOR SPECIAL STUDENTS

Each Special Student enrolled in the Faculty of Arts and Science is required to pay fees at the office of the Comptroller, St. George campus, according to a schedule to be set.

Each student will be given a statement of the required fees prior to registration.

V. OTHER UNIVERSITY FEES

Each student is required to pay to the office of the Comptroller at the opening of the session, or as otherwise specified, such of the following fees as may be required of him.

Application fee $10

Each applicant who is not in full-time attendance at a Canadian high school or who has not previously registered at this University is required to submit this application fee together with his application form to the Office of Admissions, University of Toronto, Simcoe Hall, Toronto 181, Ontario.

Late Registration fee . . . . . (minimum) $10
(maximum) $20

Each student who registers after the last date for normal registration must pay a late registration fee of $10 plus $1 for each day of delay, to a maximum of $20.

Fee for late confirmation of programme . . . . . (per day) $ 1
(maximum) $20

Each student who fails to confirm his programme by the date appointed must pay $1 for each day's delay, to a maximum of $20.

Special Physical Education fee (women only) $50

See under Section entitled "Physical Education" for students who do not complete the requirement.

Supplemental Examination fee:

One subject $10

Each additional subject . . . . . $ 5

Each student who applies to write a supplemental examination either at the annual examination in May or the supplemental examination in August must pay this fee on or before December 1 if writing at the annual examination, or July 10 if writing at the August examination.

Fee for late application for supplemental examination . . . . . (per day) $ 1
(maximum) $20

Each student who fails to file his application for a supplemental examination by the date appointed for the receipt of such must pay $1 for each day's delay, to a maximum of $20.

Outside Centre fee . . . . . (minimum) $10
(each additional paper) $ 5

Each student who applies to write an examination outside Toronto must pay this fee on or before December 1 if writing at the time of the annual examinations, or July 10, if writing at the August examinations. An additional fee of $5 must be paid for each additional examination.

Special Examination fee $10
Each student who is granted permission to write a special examination must pay this fee.

FEES FOR DISPENSATION

Each student receiving dispensation from attendance at lectures and laboratory classes (if any) must pay to the College in which he is enrolled a dispensation fee of $40.00 each term during which he is granted dispensation, and to the University a dispensation fee of $20 for each such term; these fees must be paid as soon as dispensation is granted, and the payment entitles the student to supervision of such term work as may be prescribed.

Each student receiving dispensation from attendance at lectures and laboratory classes in one subject must pay a fee of $25.

MISCELLANEOUS FEES

Fee for transcript of record ..... $ 1
(For each additional copy ordered at the same time, 25¢
Fee for re-checking marks ..... (per paper) $ 5
(Refund to be made if error is found)
Fee for study elsewhere $100

GENERAL INFORMATION

THE LIBRARY

The Library collection exceeds three million volumes, 414,000 microtexts, 77,000 maps, 6400 manuscript titles, and 53,000 other items. These figures include the holdings of the central University Library, more than forty-five libraries in colleges, faculties and departments of the University, and the libraries of federated, affiliated and related institutions.

Besides its extensive specialized services, the University Library administers several undergraduate collections on campus. The largest undergraduate collection, the Wallace Room, consists of over 84,000 volumes and has photocopy, typing and microform-reading equipment adjacent to the reading areas. Information concerning the use of the library is available in a *Student's Guide to the University Library*, supplemented by audio-visual programmes and special bibliographic seminars. Tours of the University Library are available to new students at the beginning of each academic session. Copies of the *Guide* are available at the "Circulation" and "Reference" counters of most libraries in the University.

Each student in the Faculty of Arts and Science has access to the library facilities of his own college, the University Library, and the departmental libraries.

RESIDENCE ACCOMMODATION

In addition to college residences, accommodation may be located at the following:

Devonshire House

Established in 1907 as a gift to the University, Devonshire House is a Hall of Residence for men within the University. It is designed primarily for undergraduates in the professional faculties, but some Arts and Science men and graduate students are included among its members. The facilities of the Residence include common rooms, a library, a music room, games rooms, kitchenettes, a laundry room, a television room, and a mini-gym. Since there is no dining hall, many members eat at Hart House nearby. The House is also open during the summer months. Requests for application forms and other inquiries should be directed to the Secretary to the Dean, Devonshire House, University of Toronto.

Housing Service

To assist University students and staff who may not be accommodated in the residences or who choose to live off-campus, the Housing Service, 49 St. George Street (telephone 928–2542), maintains a registry of accommodation reported to it by householders. Inclusion in the registry does not necessarily imply inspection nor approval. As the accommodation is for immediate occupancy it cannot be reserved in advance.

Married Student Apartments

There is an apartment complex, consisting of one and two bedroom units, located near the University, which is available for rent to married students. Applicants must be registered full-time day students. For further information and application, write University Housing Service, 49 St. George Street Toronto 181.

Campus Co-operative Residence

Campus Co-operative Residence Incorporated offers residence and apartment accommodation for graduate and undergraduate students. Since the University of Toronto has no official connec-

tion with Campus Co-operative Residence, Inc., inquiries should be addressed direct to:

Campus Co-operative Residence Incorporated
395 Huron Street
Toronto 181, Ontario (Telephone 964-1961)

St. Andrew's–University Day Nursery

Pre-school education and day care facilities for children of University of Toronto students are provided by the St. Andrew's – University Day Nursery. Located at St. Andrew's United Church, 117 Bloor Street East, the nursery accepts children aged three to five years with a limited number of spaces for those aged two to three years. It operates from 8:30 a.m. to 5:30 p.m. Fees are reasonable, and noon meals and morning and afternoon snacks are provided. There is a daily rest period each afternoon.

Priority of enrolment is given to children of University students, although children of other members of the University community will be considered. Information may be obtained from the nursery (telephone 921–7075).

UNIVERSITY HEALTH SERVICE

Medical examination by the Health Service is required of all students participating in competitive athletics, and of all first-year female students for whom physical education may be a requirement.

Vaccination. All students must be vaccinated against smallpox unless proof of successful vaccination within the previous three years is submitted.

Chest X-ray during the first year of attendance is required of all students unless proof of a normal chest X-ray or negative tuberculin reaction within the previous six months is submitted.

PHYSICAL EDUCATION (WOMEN ONLY)

Each First Year woman student must register for, and satisfactorily complete, the University requirement in Physical Education including a swimming test. Failure to do so renders the student liable to a special fee of $50.00.

Physical Education credits may be earned by participation in instructional classes, intercollegiate and intramural sports, swimming, water safety and life saving classes.

Exemptions may be granted for reasons of health, etcetera. Application to claim exemption must be made by October 31 to the University Health Service, 256 Huron Street.

SUMMARY OF REGULATIONS OF THE CAPUT CONCERNING STUDENT DISCIPLINE

Subject to the general regulations of the Caput of the University regarding jurisdiction in matters of discipline, the Council of University College, the governing bodies of the Federated Universities and Affiliated Colleges, and the Councils of the Faculties, Schools, and Institutes have disciplinary jurisdiction over the conduct of all students registered in these Divisions of the University in all matters of local or internal concern to these Divisions. Jurisdiction over the conduct of students while in residence regardless of the Division of the University in which they are registered is vested in the body administering the residence.

Where the appropriate body exercising disciplinary jurisdiction has found that a student of the University has engaged in conduct prejudicial to the interests of the University, the Caput may, in its discretion, suspend or expel such student from the academic privileges of the University. Every decision of the Caput involving the expulsion of a student from the University requires confirmation of the Board of Governors.

The constitution of every society or association of students in the University and all amendments to such constitutions require to be approved by the relevant University authorities. The giving of approval, and the responsibility for the programmes of student societies and associations, shall rest as follows:

(1) With the authorities of the College, Faculty or School concerned where the membership of the student society or association is drawn from a single College, Faculty or School.

(2) With the Board of Stewards of Hart House, where the student society or association is a Committee of Hart House and is controlled by the Board of Stewards of Hart House.

(3) With the Caput, in the case of all other student societies and associations.

CHRONOLOGY

1827—Royal Charter granted to establish King's College at York (Toronto).

1836—Upper Canada Academy founded at Cobourg, Ont. Became Victoria College in 1841.

1843—Official Opening of King's College, located in former Parliament Buildings of Province of Upper Canada.

1849—King's College became University of Toronto. Connection with Church of England terminated.

1851—Trinity College established.

1852—St. Michael's College founded.

1853—University College established, assuming responsibility for all teaching in the University.

1856—Construction of present University College building started. Completed 1859.

1881—St. Michael's College affiliated with University. Full federation effected 1910.

1887—Instruction begun in fields other than Arts and the Sciences. University College became purely an Arts College.

1890—East section of University College building, including University Library, gutted by fire. Immediately reconstructed.

1890—Victoria College federated with University of Toronto.

1892—Victoria College moved to Toronto from Cobourg.

1892—University Library opened—enlarged 1909 and 1954.

1904—Trinity College federated with University of Toronto.

1905—Part-time courses leading to the B.A. degree were established.

1920—The Department (now Division) of University Extension was organized.

1920—Degree of Bachelor of Commerce established.

1925—Trinity College moved to present buildings from old Queen Street site.

1931—Ontario Upper School (Grade 13) standing required for admission.

1960—Name of Faculty changed to "Faculty of Arts and Science".

1961—Degree of Bachelor of Science established.

1962—New College established.

1964—Innis College established.

1965—Scarborough College opened.

1967—Erindale College opened.

1969—New Programme instituted in the Faculty of Arts and Science.

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University of Toronto
Faculty of Arts and Science
Provisional Timetable
St. George Campus

new programme 1970

University College
Victoria College
Trinity College
St. Michael's College
New College
Innis College

Students entering a first-year programme should note that some courses open to them have Grade XIII subjects (or their equivalent) as prerequisites and also have other New Programme courses as co-requisites. For convenience, those courses open to First-Year Students that have stated prerequisites and co-requisites are listed below together with their prerequisites and co-requisites. Students should consult the Course Descriptions in the Calendar for prerequisite and co-requisite requirements of 200-, 300- and 400-series courses.

COURSES OPEN TO FIRST-YEAR STUDENTS WITH PREREQUISITES AND CO-REQUISITES

COURSE	PREREQUISITE	CO-REQUISITE
BIO 120	XIII BIO recommended	
CHM 120	XIII CHM,* MAT A	MAT 130/134/135/139/150
CSC 118S	CSC 108/148	
CSC 148F/Y	XIII MAT A	MAT 134/135/139/150
CSC 158S	CSC 148	
CSC 218S	CSC 108/148	
CSC 248S	CSC 148	
FAR 100		FAR 101/102
FRE 100	Reading Knowledge of French	
FRE 120,140,142	XIII FRE	
GER 110	XIII GER	GER 120/130
GER 120,130	XIII GER	
GER 205	XIII GER/GER 105	
GLG 120	XIII MAT A + BIO/CHM/PHY	
GRK 120S,121S, 122F,123F	XIII GRK/GRK 100	Any GRK Course/Half-course
ITA 120Y	XIII ITA	
ITA 121Y	XIII ITA	ITA 120Y/190Y
ITA 140,141		ITA 100
ITA 190Y	XIII ITA	
LAT 120F,121S, 122F,123S	XIII LAT/LAT 100/130	Any LAT Course/Half-course
LAT 130	XII LAT/LAT 100	
MAT 120,130, 134,135	XIII MAT A	
MAT 139	XIII MAT A & B**	
MAT 140	XIII MAT A & B	
MAT 150	XIII MAT A & B	MAT 140 (PHY 120 also recommended)
MAT 225	XIII MAT A/MAT 100/110	
MAT 245S		MAT 140
MUS 120	II Theory, III Harmony, Performance	MUS 100
PHY 120	XIII MAT A & B, PHY	MAT 130/135/139/150
PHY 130,140	XIII MAT A	MAT 130/135/139/150
SLA 121	XIII Russian	
SLA 201	XIII Russian/SLA 100	
SPA 120	XIII SPA	
SPA 125		SPA 100/120

*Students with XII CHM and XIII MAT A are accepted into CHM 120 if they take an additional 2 hr/week tutorial in the first term.

**Students without MAT B are accepted into MAT 139 if they take an additional 2 hr/week tutorial in the first term.

FACULTY OF ARTS AND SCIENCE

PROVISIONAL TIMETABLE 1970-71

This provisional timetable is published as a guide to students constructing their programmes of study. It is as definite as it can be at the time of going to press, but it is likely that a few changes will have to be made by September primarily in an attempt to remove conflicts that exist between courses that a number of students indicate that they wish to combine in one year's programme.

Courses are listed strictly in alphabetical order by their code letters and in numerical order within a given code. An abbreviated title (used also on transcripts) is also given.

MTWRF are initial-type abbreviations for the days of the week, e.g.:

T represents Tuesday;
R represents Thursday;
N represents timetable hours that are not yet specified; they will be assigned by September;
ARR indicates that the details are to be arranged; the Departments should be consulted.

The solidus symbol (/) means OR
The ampersand symbol (&) means AND

e.g., for ANT 204 is printed 2L:TR11/12,1T:N indicating that there are two lecture hours a week (2L) and one tutorial hour (1T) to be set in September. One section has lectures on Tuesdays and Thursdays at 11 a.m., the other on Tuesdays and Thursdays at 12 noon.

Following the timetable information are listed any other courses in this calendar with which the course in question may not be combined because of similarity of content. The following group of courses is referred to as "STA group" and no two of these may be combined in any degree programme:

STA group: ANT 451, ECO 220, GGR 270, GLG 221Y, POL 206, PSY (200F & 201S), SOC 201, STA 232, 242, 252.

It should be noted that a course is specified completely by its three-letter code and three-digit number; the suffix F, S or Y merely indicates the distribution of the hours of instruction over the year. Thus, for example, a student may not combine PSY 202F and PSY 202S in his degree programme expecting credit for two half-courses; credit for only one half-course will be given.

In the last column is given the course in the 1969-70 calendar that is equivalent to the present course; the letter S indicates that the course is virtually the same as the 1969-70 course bearing the same number.

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
ACT223F	MATH OF INVESTMENT	2L1T:MWF10		S
ACT233S	INTRO LIFE CONTINGENCIES	2L1T:MWF10		S
ACT323	FINITE CALCULUS	2L1T:MWF1		S
ACT333	THEORY LIFE CONTINGENCIES A	2L1T:TWR4		S
ACT423	THEORY LIFE CONTINGENCIES B	2L1T:MWF12		S
ACT433	ACTUARIAL TOPICS	2L1T:MWF3		S
ANA200	HUMAN ANAT & HISTOL	2L:TR3,2P:W9-11		S
ANT100	INTRO ANTHROP	2L:TR12		S
ANT150	WORLD REGIONS PEOPLES	2L:TR11, 1T:N		ANT140
ANT201	N. AMER. PREHISTORY	2L:TR9,1T:N		S
ANT203	INTRO PHYSICAL ANTH	2L:TR2,1P:W9/10/11/12		S
ANT204	SOC & CULT ANTHROP	2L:TR11/12,1T:N		S
ANT220	WORLD LANGS	3L:MWF3		ANT240
ANT222	CAN INDIAN LANGS	2L1T:MWF9		ANT242
ANT241	N. AMER INDIAN	2L1T:MWF2		S
ANT311F	ARCHAEOL FIELD WK	1L2P:F9-12		ANT333
ANT312S	ARCHEOL LAB	2P:F9-11		ANT333
ANT313S	ARCHAEOL INTERPRET	1L2T:MWF2		–
ANT330F	HUMAN BIOL	3P:M9-12		ANT337
ANT331	PROBS HUM EVOL	3P:T9-12		ANT335
ANT332S	HUMAN ORIGINS ADAPTNS	1L2P:M9-12		ANT334
ANT333	PRIMATE BEHAVIOUR	2L1P:R9-12		ANT336
ANT340	POLITICAL ANTHROP	1L1T:TR3		ANT323
ANT341	ANTHROP OF RELIGION	2L:TR2		ANT329
ANT342	ART OF OCEANIA AFR N. AMER	2L:TR11		ANT326
ANT344	SE ASIA PEOPLES CULT	2T:MW1		ANT328
ANT410F	ARCHAEOL THEORY I	2L:T2-4		ANT433
ANT411S	ARCHAEOL THEORY II	2T:T2-4		ANT433
ANT412F	ARCTIC ARCHAEOL	1L2T:MWF1		–
ANT413S	SW N. AMER ARCHAEOL	1L2T:MWF1		–
ANT414F	ADV REGIONAL ARCHAEOL	1L2T:MWF12		ANT424
ANT415S	SE N. AMER ARCHAEOL	1L2T:MWF12		–
ANT420	LANG & CULTURE	2L:T9-11		ANT330
ANT421	PHONOLOGY	ARR		–
ANT422	ADV LINGUISTICS	ARR		–
ANT430	PHYS ANTH PROBLEMS	ARR		–
ANT431	HUM GROWTH DVPT	ARR		ANT428
ANT433	PRIMATE BIOLOGY	1L:N,3P:M2-5		–
ANT434	HUMAN OSTEOLOGY	3P:F2-5		ANT426
ANT435S	ADV HUMAN BIOLOGY	3P:ARR		–
ANT440	SOCIAL CHANGE	2L1T:MWF11		ANT420
ANT441	ECOL & ECON ANTH	2L:R9-11		ANT323
ANT442	CULT & COMMUNICATION	2L:T4-6		ANT427
ANT443	LAT AMER PEOPLES CULT	2L:M3-5		ANT423
ANT444	URBAN FIELD WORK	2L:TR1		ANT429
ANT450	SEMINAR	2L:R4-6		–
ANT451	STATISTICS	2L:TR3	STA Group	–

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
APM236S	NUMERICAL METHODS	2L1T:MWF9	APM361F	APM231 (EXT)
APM246S	MECHANICS	2L1T:MWF9	APM251	S
APM251	INTRO APP MATH	2L1T:MWF9	APM246S/ MAT244F	S
APM331F	APP DIFF EQUATIONS	2L1T:MWF12	APM251/ MAT244F	APM326
APM336S	MATH IN SOCIAL SCI	2L1T:MWF12		–
APM351	DIFF EQNS OF MATH PHYSICS	2L1T:MWF9	APM441	S
APM361F	NUMERICAL ANALYSIS	2L1T:MWF10	APM236S	APM361
APM421F	FOUNDATIONS QUANTUM MECH	2L1T:MWF12		APM421
APM426S	RELATIVITY	2L1T:MWF12		–
APM436S	FLUID MECHANICS	2L1T:TR3,W4		APM431
APM441	DIFF EQNS OF MATH PHYSICS	2L1T:MWF9	APM351	S
APM451F	LINEAR PROGRAMMING & GAMES	2L1T:MW1,R4		APM451
APM456S	OPTIMIZATION & CONTROL	2L1T:MW1,R4		APM451
APM461F	INITIAL VALUE PROBLEMS	2L1T:MWF2		APM461
APM466S	BOUNDARY VALUE PROBLEMS	2L1T:MWF2		APM461
APM491F	TOPICS IN APPLIED MATH	ARR		APM491
APM496S	TOPICS IN APPLIED MATH	ARR		APM491
AST100	INTRO ASTRONOMY	2L:MW10/11, 1P:F10/11/12/1	AST200/220	S
AST200F	TOPICAL ASTRONOMY	2L:MW1	AST100/220	S
AST220	GENERAL ASTRONOMY	2L:MF1,1P:W1	AST100/200	S
AST300	ASTRON & ASTROPHYSICS	2L:MW1		AST310,20
AST310Y	EXPTL ASTRONOMY	2P:M9-11		AST370
AST400	ASTROPHYSICS	2L:MW1		AST420
AST410Y	ASTRON RESEARCH	ARR		AST470
BCH320	INTRO BIOCHEM	2L:MW12	BCH321	–
BCH321	INTRO BIOCHEM	2L1T:MWF12	BCH320	S
BCH370Y	BIOCHEM TECHNIQUES LAB	3P:M/F9-12/T2-5	BCH371	–
BCH371Y	BIOCHEM LAB	3P:W9-12	BCH370	S
BCH421S	STRUCT & FUNCT PROTEINS	2L:TR9		S
BCH422F	BIOCHEM OF MEMBRANES	2L:TR9		S
BCH423F	METABOL ENZYMOL & CONTR MECH	2L:TR10		S
BCH424S	BIO-ORGAN MECHANISMS	2L:TR10		S
BCH471	ADV BIOCHEM LAB	8P:ARR		S
BIO100	BIOLOGY PRINCIPLES	2L:TR9/11/2/MW10/1, 3P:M/T/W/R2-5/W9-12		S
BIO120	EVOLUTIONARY ENVRNMTL BIOL	2L:TR9/11/2/MW10/1, 3P:M/T/W/R2-5/W9-12		S
BIO300	TERRESTRIAL FRESHWTR BIOL	FIELD, ARR		BIO490
BIO301	MARINE BIOLOGY	FIELD, ARR		–
BOT100	INTRO PLANT BIOLOGY	2L:TR9,3P:M2-5		S
BOT200	BIO OF LOWER PLANTS	2L:TR12,3P:W9-12		BOT221
BOT210	PLANT MORPHOL & EVOLUTION	2L:MW1,3P:M9-12		BOT220

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
BOT230	PLANT ENVIRNMT & VARIATION	2L:TR4,3P:R/F9-12		BOT222
BOT240	INTRO CELL BIOLOGY	2L:TR1,3P:W/R9-12		BOT223
BOT300	SYSTEMATIC BOTANY	2L:TR2,2P:F9-12		BOT373
BOT301	GENERAL MYCOLOGY	2L:TR1,3P:F9-12		BOT473
BOT302	PHYCOLOGY	1L1T:TR3,3P:T9-12		BOT472
BOT320	PLANT PHYSIOL & BIO-CHEM	2L:MW2,3P:M/R9-12	BOT321	BOT311
BOT321	PLANT PHYSIOL & BIO-CHEM	1½L½T:MW1, 3P:W/F9-12	BOT320	BOT371
BOT330	PLANT ECOLOGY	2L:TR1,3P:W5-8/R9-12		BOT310
BOT340	STRUC & DEVELOPMENT	2L:MW1,3P:F2-5		–
BOT341	CYTOGENETICS	2L:TR3,3P:W/F9-12		BOT370
BOT351	PLANT PATHOLOGY	1L1T:MW4,3P:T9-12		BOT476
BOT400	BIOSYSTEMATICS	2L:TR9,3P:M2-5		BOT471
BOT401	ADV MYCOLOGY	5P:ARR		–
BOT402	BRYOLOGY	1T:F1,3P:T2-5		BOT479
BOT420	PLANT GROWTH & DEVELOPMENT	1L½T:TF1,3P:ARR	BOT421/422	BOT475
BOT421	CELL METABOLISM	1L½T:RF1,3P:ARR	BOT420/422	BOT490
BOT422	PLANT PHYSIOL	2L½T:TRF1	BOT420/421	–
BOT423	RADIOISOTOPES IN BIOLOGY	1L:ARR,3P:T/R2-5		BOT481
BOT430	PLANT GEOG & PALYNOLOGY	2L3P:ARR		BOT484
BOT431	WETLAND & AQUATIC ECOLOGY	1L3P:ARR		BOT493
BOT432	APPLIED ECOLOGY	1L:M11,3P:M/T2-5		BOT495
BOT440	ADVANCED CYTOLOGY	5P:ARR		BOT477
BOT441	ELECTRON MICROSCOPY	1L1T3P:ARR		BOT491
BOT442	PLANT BREEDING	ARR		BOT480
BOT450	PLANT VIROLOGY	1L:R11,3P:F2-5		BOT482
BOT451	FUNGI & PARASITISM	1L1T:WF11,3P:R2-5		BOT483
BOT460	BIOL SCIENCE PROJECT	5P:ARR		BOT498
CEN617	INORG CHEM	Scheduled by Faculty of Applied Sci. & Eng.	CHM235	–
CHM100	CONTEMPORARY CHEM	2L1T:MWF10	CHM120	S
CHM120	CONCEPTS MODERN CHEM	2L:TR9/11/12/MW1, 1T:N(2T:F1-3 for studs. without XIII CHM) 2P:M/T/W/R2-6	CHM100	S
CHM220	CHEM STATICS & DYNAMICS	2L1T:MWF11/3		S
CHM235	CHEM STRUCTURE & SYNTHESIS	2L:TR1/2/4/MW1, 4P:M/T/W/R/F9-1	CEN 617	CHM221
CHM320	PHYSICAL CHEM	2L:TR1,4P:T/W9-1		CHM327
CHM323S	QUANTUM CHEM	2L:TR3		S
CHM324F	CRYSTAL CHEM	2L:TR3		CHM325F
CHM325F	MACROMOLECULAR CHEM	2L:TR4		–
CHM330	INORGANIC CHEM	2L:MW1,4P:M/T/R9-1		CHM324,74
CHM340	ORGANIC CHEM	2L:TR2,4P:T/R/F9-1		CHM321,71/2
CHM347S	BIOL-IMPORTANT CMPDS	2L:TR4		CHM340S
CHM350Y	INSTRUMTL METHODS	4P:M/R/F9-1		–
CHM420	REACTION KINETICS	2L:TR4		CHM427
CHM422F	FDTLS QUANTUM MECHANICS	2L:TR3		–
CHM423S	APPROXIMATION METHODS	2L:TR3		–

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
CHM424F	SPECTROSCOPY THEORY I	2L:TR1		–
CHM425S	SPECTROSCOPY THEORY II	2L:TR1		–
CHM429Y	PHYS CHEM RESEARCH	5P:ARR		CHM477
CHM430F	THEOR INORG CHEM I	2L:TR10		CHM424
CHM431S	THEOR INORG CHEM II	2L:TR10		CHM424
CHM435	CURRENT TOPICS INORG CHEM	2L:TR12		CHM425
CHM438F	ADV INORG CHEM LAB	10P:ARR	CHM448	CHM474
CHM439Y	INORG CHEM RESEARCH	5P:ARR	CHM429	CHM474
CHM440F	SYNTHETIC ORG CHEM	2L:MW1		CHM422F
CHM441S	STRUCTURAL ORG CHEM	2L:MW1		CHM423S
CHM444F	ORG CHEM KINETICS MECHAN	2L:TR2		CHM421F
CHM445S	MOLECULAR ORBITAL THEORY	2L:TR2		CHM420S
CHM447S	BIOLOGICAL ORG CHEM	2L:MW12		CHM419
CHM448F	ADV ORG CHEM LAB	10P:ARR	CHM438	CHM471
CHM449Y	ORG CHEM RESEARCH	5P:ARR	CHM429	CHM471
CHM470	GRAD COURSE	2L:ARR	CHM471	–
CHM471Y	GRAD COURSE	2L:ARR	CHM470	–
CIN201	SCI TECHNOL & HUMANITY	2L:M4-6,1T:N		CIN191
CIN202	CAN CULT & SOCIETY	2L:MW1,1T:N		CIN192
CIN203	CONTEMP SOC ENVIRNMT	2L:W4-6,1T:N		CIN193
CIN204	MOD ARTS (CINEMA)	2L:TR11/3,2P:W4-6		CIN194
CIN205	PHIL OF MUS PERCEPTION	2L:TR4,1T:N		–
CIN300	EDUCATION & SOCIETY	1L:W4,2T:W5-7		EDN300
CIN400	TOPICS IN EDUCATION	2T:R4-6		–
COM100	ACCOUNTING	2L:TR9/11/12,1T:N		S
COM101	INDUSTRY & TRADE	2L:TR2		S
COM220	MANAGEMENT ACCTG	2L:M/T/W4-6		S
COM300	LEGAL ENVIRNMT OF BUS	2L:TR9/R4-6		S
COM320	ACCTG PROBLEMS	2L:TR11		S
COM400	MARKETING	2L:TR12		S
COM401	PRINCS OF ADMIN	2L:TR3		S
COM420	ACCTG LIT & RES	2L:W9-11		S
COM421	CORPORATION FINANCE	1L:T11,1T:R10/11		S
COM422	ANAL OF PROD SYSTEMS	2L:TR2		S
COM423	CAN BUSINESS TAXATION	2L:T4-6		S
COM424	INVESTMENTS	2L:TR10		S
COM426	INTRO ACCTG FINANCE	2L:TR9		S
CSC108F	COMPUTER PROGRAMMING	2L2T:TR5-7	CSC108Y/ 148Y/148F	CSC108Y
CSC108Y	COMPUTER PROGRAMMING	1L1T:TR11	CSC148Y/ 148F/108F	CSC108Y
CSC118S	THE COMPUTER & SOCIETY	1L2T:TR5-7	CSC158S	–
CSC148F	INTRO COMPUTING	2L2T:MTWR1/MWF9F1/ MWF11F1	CSC108F/ 108Y/148Y	CSC148Y
CSC148Y	INTRO COMPUTING	1L1T:TR12	CSC108F/ 108Y/148F	CSC148Y
CSC158S	COMPUTER & SOCIETY	1L2T:MWF9/11	CSC118S	–
CSC218S	COMPUTER GRAPHICS	2L1T:MWF12		–

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
CSC228F	PROGRAMMING FOR DATA PROC	2L1T:MWF12		CSC228 (EXT)
CSC248S	PROGRAMMING LANGUAGES	2L1T:TR2,F1		S
CSC258F	ORG & ASSEMBLY LANG PROG	2L1T:TR2,F1		CSC358S
CSC348F	SWITCHING THEORY	2L1T:MWF3		S
CSC368S	LANGUAGE PROCESSORS	2L1T:MWF10		CSC368
CSC438F	COMPUTABILITY THEORY	2L1T:MWF3		CSC468
CSC448S	AUTOMATA THEORY	2L1T:MWF3		CSC468
CSC458F	INFORMATION STRUCTURES	2L1T:MWF12		–
CSC468S	OPERATING SYSTEMS	2L1T:MWF12		–
CSC488F	TOPICS IN COMPUTER SCI	ARR		–
CSC498S	TOPICS IN COMPUTER SCI	ARR		–
EAS100	INTRO MOD STD CHINESE	3T2P:MTWRF3		S
EAS102	HIST E ASIAN CIV	2L:TR10,1T:N	HIS280	S
EAS110	BASIC SANSKRIT	2L4P:MWF3-5		S
EAS112	INTRO INDIAN HIST	2L1T:MWF12		S
EAS116	INTRO BUDDHISM	1L:F1,1T:N		S
EAS120	INTRO MOD JAPANESE	1L3T1P:MTWRF9		S
EAS124	CHIN JAP LIT IN TRANS	1L:M2,1T:W/F2		S
EAS126	ARTS OF E ASIA	2L:TR11		–
EAS200	INTERM MOD STD CHINESE	3L2P:MTWRF2		S
EAS202	CHIN HIST TO 1550	2L1T:MWF2		S
EAS203	PRE-HAN PHIL	2L:TR1		S
EAS206	INTRO LIT CHINESE	3L:F1,M9-11		–
EAS210	INTERM SANSKRIT LANG	3T:MWF9		S
EAS211	INTERM SANSKRIT LIT	3T:MWF10		S
EAS212	INDIAN POLIT HIST	1L2T:MWF1		S
EAS213	OUTLINE INDIAN PHIL	3T:MWF3		S
EAS214	INDIAN LIT IN TRANSL	3T:MWF2		S
EAS215	INTRO MODERN HINDI	1L4P:MTWRF3		S
EAS220	INTERM MOD JAPANESE	2L2P:MTWR1		S
EAS222	POL SOC HIST JAPAN	2T:T4-6		S
EAS224	JAP POET DRAMA IN TRANS	1L1T:TR10		S
EAS302	SANSKRIT & HIST TEXTS	3T:TR12,F1	EAS303/10	EAS322
EAS303	SANSKRIT & PHIL TEXTS	3T:TR11,F1	EAS302/10	EAS322
EAS310	SANSKRIT & LIT TEXTS	3T:TR10,F1	EAS302/3	EAS322
EAS311	HIGHER SANSKRIT LIT	3T:MWF3		EAS336
EAS312	INDIAN HIST TO 1800	1L2T:MWF2		EAS337
EAS313	ANCIENT INDIAN PHIL	3T:MWF9		EAS329
EAS314	INDIAN DRAMA	3T:MWF5		–
EAS315	READINGS IN HINDI	1L3P:MTWR1		EAS310
EAS317	INTRO PALI LANG & TEXTS	3T:MTW4		EAS328
EAS319	MODERN HINDI	1L4P:MTWRF3		EAS338
EAS320	ADV MOD JAPANESE	3L:MWF9		EAS304,24
EAS322	CLASSICAL JAPANESE	3T:MWF12		EAS330
EAS323	JAPANESE FIC IN TRANS	1L:F1,2T:T4-6		–
EAS324	ELEM WRITTEN JAPANESE	3L:MWF2		EAS332
EAS332	ADV MOD STD CHINESE	3L:MWF11		EAS320
EAS333	BUDDHIST PHIL TO AD 618	2L:TR10		–

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
EAS334	CHINESE FICTION	2L:MW1		EAS204
EAS335	INTERM LITERARY CHINESE	3L:ARR		EAS326
EAS336	CHINESE READINGS	2T:ARR		–
EAS392	S & E ASIA HISTORIOGRAPHY	2T:R4-6		–
EAS402	ADV SANSKRIT & HIST TEXTS	3T:MWF1	EAS403/10	EAS422
EAS403	ADV SANSKRIT & PHIL TEXTS	3T:MWF10	EAS402/10	EAS422
EAS410	ADV SANSKRIT & LIT TEXTS	3T:MWF2	EAS402/3	EAS422
EAS411	ADV SANSKRIT LIT	3T:MWF4		EAS445,22
EAS412	INDIAN HISTORY TOPICS	3T:MWF9		EAS421
EAS413	MEDIAEVAL INDIAN PHIL	3T:MWF12		EAS429
EAS414	INDIAN POETICS & CRIT	3T:MWF1		–
EAS417	PALI LIT	3T:MWF3		EAS428
EAS418	MARATHI LIT	3T:TWR4		EAS452
EAS419	READINGS IN HINDI	3T:MWF11,1P:N		EAS447
EAS420	CLASS JAP AUTHORS	2T:TR10		EAS430
EAS421	MOD JAP LIT	1½T:R4-6		EAS442
EAS422F	TOKUGAWA INTELL HIST	2L:T9-11		–
EAS423F/S	JAP INTELL HIST	2L:R9-11		EAS441
EAS424	INTRO JAPANESE MUSIC	2T:R9-11		EAS446
EAS426	RDGS IN MOD JAPANESE	ARR		EAS424
EAS427	TRAD JAPANESE CIV	ARR		HIS480
EAS430	CHINESE NOVEL	3L:MWF9		EAS420
EAS431	MOD CHINESE LIT	3L:MWF11		EAS426
EAS432	19 CENT LIT CHINESE	2L:ARR		EAS440
EAS433Y	CHIN BIBLIOG & REF WORKS	1L:F1		EAS448
EAS435	PRE-HAN LIT	2L:TR3		EAS438
EAS436	MOD CHIN ADV READING	2T:MW1		–
EAS437	BUDDHISM & NEO-CONFUC	2L:TR2		EAS427
EAS438	ADV CLASS CHIN SYNTAX	2T:TR10		EAS436
EAS439	CLASS CHIN HIST TEXTS	3T:MWF2		–
EAS440	CLASS CHIN POETRY	3T:MWF12		EAS450
ECO100	INTRO ECONOMICS	3L:MWF9/10/11/12/1/2/3	ECO102	S
ECO101	EUR ECON HISTORY	3L:MWF10		S
ECO102	INTRO ECONOMICS	3L:MWF9/11	ECO100	ECO100
ECO200	MICROECON THEORY	2L:TR10/11/12/1	ECO241	S
ECO202	MONEY BANKING NAT INCOME	2L:TR10/1/3,1T:N	ECO204/5/40	S
ECO204F	MACROECON THEORY	2L:TR3,1T:N	ECO202/40	S
ECO205S	MACROECON POLICY	2L:TR3,1T:N	ECO202/40	S
ECO220	QUANTIT METHODS	3L:MWF3,1T:N	STA Group	S
ECO221	N. AMER ECON HIST	2L:MW1,1T:N		S
ECO222	COMPUTING FOR SOC SC	2L:TR2,½T:N	CSC148/108	S
ECO240F	MATH APPRCH TO MACROECON	2L:TR3	ECO202/4/5	S
ECO241S	MATH APPRCH TO MICROECON	2L:TR3	ECO200	S
ECO320	POL ECON OF DVLPT	2L:M4-6		S
ECO322	HIST OF ECON THOUGHT	2L:TR10		S
ECO323	IND ORG & PUB POLICY	2L:W4-6		S
ECO324	ECON DEVLPT	2L:T4-6		S
ECO325F	ADV MACROEC THEORY	2L:TR12,½T:N		S

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
ECO326S	ADV MICROEC THEORY	2L:TR12,1T:N	ECO332	S
ECO327	ECONOMETRICS	2L:TR2		S
ECO328	INTERNATIONAL ECON	2L:M/R4-6,1T:T/R10		S
ECO329	BUS CYC & ECON GROWTH	2L:M9-11		S
ECO330	USSR ECONOMY	2L:W9-11		–
ECO332	ADV MATH ECON THEORY	2L:TR12	ECO325/26/43	–
ECO333F	URBAN REGIONAL ECON I	2L:R4-6		S
ECO334S	URBAN REGIONAL ECON II	2L:R4-6		S
ECO336	PUBLIC SECTOR ECON	2L:TR9		ECO336,7
ECO338	EUR ECON HISTORY	2L:R4-6,1T:F1	ECO101	S
ECO339F	LABOUR ECON	2L:TR3,½T:N		ECO340
ECO340S	MANPOWER ECON	2L:TR3,½T:N		–
ECO341	FORMATION OF ECON POLICY	2L:F9-11		S
ECO342	COMPAR INDUSTRIALIZATION	2L:MW1		–
ECO343	ECON THEORY	2L:TR11	ECO332/240/41	–
ECO344	INDUSTRIAL REL	2L:T4-6		ECO339
ECO345	LAT AMER ECON DEVLPT	2L:R4-6		–
ECO420	READING	ARR		–
ECO421F	WORKSHOP	ARR		–
ECO422S	WORKSHOP	ARR		–
ECO423	THESIS	ARR		–
ENG102	MORE TO MILTON	3L:MWF3		ENG204
ENG108	20TH CENTURY LIT	3L:MWF10/11/12/2/ TR11,W1		ENG100
ENG112	MAJOR BRITISH WRITERS	3L:MWF9/2		ENG105
ENG152	ENG CANADIAN LIT	3L:MWF10/M1,TR12		–
ENG165	ENG LIT FORMS & APPROACHES	3L:M1,TR12/MWF3		ENG104
ENG200	OLD ENG LANG & LIT	3L:MWF2		ENG103
ENG204	MEDIAEVAL LIT	3L:MWF11		–
ENG212	SHAKESPEARE	3L:TR11,W1/MWF12/3		ENG101
ENG218	MAJOR AMER AUTHORS	3L:MWF9/10/TRF1		–
ENG220	VARIETIES OF PROSE FICTION	3L:MWF10/3/TR10,W4		ENG206
ENG230	VARIETIES OF DRAMA	3L:MWF9/11/2/TR12,M1		ENG205
ENG240	POETRY FORMS & STYLES	3L:TWR4		ENG202
ENG260	BIOGRAPHICAL LIT	3L:MWF12		–
ENG300	BEOWULF & OLD ENG	3L:MWF9		ENG208
ENG302	16 CENT POET PROSE	3L:MWF11/2		ENG211
ENG304	ENGLISH POET PROSE 1600-1660	3L:MWF10/3		ENG321
ENG306	ENG LIT 1660-1800	3L:MWF9/12		ENG320
ENG308	ROMANTIC POET PROSE	3L:MWF10/2		ENG435
ENG312	CHAUCER	3L:MWF11/3/TR11,W1		ENG210
ENG315	MILTON POPE WDSWTH YEATS	3L:MWF12		ENG207
ENG322	FICTION TO 1832	3L:MWF11/3		ENG212
ENG324	FICTION 1832-1900	3L:MWF10/2		ENG212
ENG328	MODERN NOVEL	3L:MWF12/3/TR2,F4		ENG440
ENG332	DRAMA TO 1642	3L:MWF10/11/TR11,W1		ENG335
ENG334F	RESTOR 18 CENT DRAMA	3L:MWF3		–
ENG338	MODERN DRAMA	3L:MWF9/2/TRF1		ENG439
ENG341	LONGER ENG POEM	3L:MWF10		ENG203

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
ENG346	VICTORIAN POETRY	3L:MWF12/TRF1		ENG436
ENG348	MODERN POETRY	3L:MWF10/TR11,W1		ENG438
ENG350	AMER LIT TO 1865	3L:MWF12/2		–
ENG352	AMER LIT SINCE 1865	3L:MWF11/TR11,W1		–
ENG354	CANADIAN POETRY	3L:MWF11		–
ENG356	CANADIAN FICTION	3L:MWF9/TRF1		ENG454
ENG368	VICTORIAN PROSE	3L:TRF1		ENG455
ENG369	WRITING SEMINAR	3L:ARR		ENG465
ENG370	SPECIAL STUDIES	3L:TR3,W4		–
ENG404	MIDDLE ENG LANG LIT	3L:MWF11		ENG420
ENG413	FOUR RENAISS AUTHORS	3L:MWF11/TR12,M1		–
ENG415	DRYDEN POPE SWIFT JNSN	3L:MWF10/3		–
ENG417	FOUR 19 CENT AUTHORS	3L:MWF10/2		–
ENG419	FOUR 20 CENT AUTHORS	3L:MWF9/12		–
ENG465	THEORIES OF LIT	3L:TR12,M1		ENG460
ENG468	HIST OF ENG LANG	3L:MWF3		–
ENG469	SENIOR ESSAY	ARR		ENG475
ENG470	SPECIAL SEMINAR	2T:TR3		–
FAR100	THEOR & PRAC OF ART HIST	2L:TR2		FAR140F
FAR101	ANCIENT ART	2L:TR1,1T:N		FAR100
FAR102	MEDIAEVAL ART	2L:TR3,1T:N		FAR100
FAR110	INTRO VISUAL ART	6P:MW2-5		S
FAR200	EUROPEAN ART 1400-1750	3L:MWF3		S
FAR201	EUROPEAN ART SINCE 1750	3L:MWF2		FAR300,20
FAR202	AEGEAN NR EAST BRONZE AGE	2L:TR10		FAR201
FAR220	LATER GK & ROMAN ARCHITEC	2L:TR11		S
FAR230	FDTLS DRAWING & DESIGN	6P:MW9-12		S
FAR300	GOTHIC ART	2L:TR9		FAR328
FAR301	RENAISS PAINTING 1480-1520	2L:TR4		–
FAR320	HELLENIST ROMAN SCULPTURE	2L:TR2		–
FAR321	EARLY MEDIAEVAL ART	2L:TR9		FAR327
FAR323	RENAISS NORTH EUROPE	2L:TR3		FAR321
FAR324	ITAL RENAISS ARCHIT	2L:MW1		–
FAR325	BAROQUE IN ROME	2L:TR1		FAR322
FAR330	INTERMED PAINTING	6P:TR9-12		FAR371
FAR331	INTRO SCULPTURE	1L:F1,4P:F9-1		FAR370
FAR332	INTRO PRINTMAKING	1L:T2,6P:MW9-12		FAR370
FAR333	STAGE DESIGN	1L:N,3P:F2-5		FAR325
FAR400	WRIGHT & LE CORBUSIER	2L:TR1		FAR422
FAR401S	DADA & AFTERMATH	2L:TR11		–
FAR420	CAN & AMER PAINTING	2L:MW1		FAR421
FAR421F	SYMBOLISM	2L:TR11		–
FAR422	DECORATIVE ARTS	2L:TR9		FAR324
FAR430	ADVANCED PAINTING	6P:TR2-5		FAR470
FAR431	ADVANCED SCULPTURE	6P:TF2-5		FAR471
FAR432	PRINTMAKING STUDIO	6P:MW2-5		FAR372
FRE100	TRAGIC LIT	1L1T:TR9		S
FRE120	INTRO TO UNIV STUDIES	1L2T:MWF9/10/ 11/12/2,2P:N		S

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
FRE140	MODERN FRENCH LIT	1L1T:TR9		S
FRE142	MAN & SOCIETY IN FICTION	1L1T:TR10		S
FRE200	COMIC LIT	1L1T:TR9		S
FRE271	LANG PRACTICE	3T:MWF11/2,1P:N		S
FRE290	INDEPENDENT STUDY	ARR		S
FRE300	FRENCH REALISM IDEALISM	1L1T:TR11/2		–
FRE316	MEDIAEVAL FR LANG & LIT	1L1T:TR10		FRE330
FRE318	16 CENT FRENCH LIT	1L1T:TR11		FRE325
FRE320	FR CLASSICAL CURRENT	1L1T:TR9		FRE220
FRE322	FR PHILOSOPHICAL CURRENT	1L1T:MW1		FRE222
FRE324	FR ROMANTIC CURRENT	1L1T:TR1		FRE224
FRE326	FR REALISTIC CURRENT	1L1T:TR9/1		FRE226
FRE328	FR SYMBOLISM SURREALISM	1L1T:TR12/1		FRE228
FRE330	FR-CANADIAN LIT	1L1T:TR4		FRE230
FRE342	FRENCH POETRY	1L1T:TR3		FRE242
FRE352	FR DRAMA 1600-1800	1L1T:TR10		FRE252
FRE354	FR DRAMA 1800-1950	1L1T:TR11		FRE254
FRE362	FR PROSE FICTION 1600-1800	1L1T:TR12		FRE262
FRE364	19 CENT FR PROSE FICTION	1L1T:TR2		FRE264
FRE366	20 CENT FR PROSE FICTION	1L1T:MW4		FRE266
FRE368	CONTEMPORARY FR LIT	1L1T:TR9		FRE428
FRE371	LANGUAGE PRACTICE	3T:MWF10/12,1P:N		FRE340
FRE372	STRUCTURE MODERN FR	1L1T:MW1		FRE275, 355
FRE373	FRENCH LANG HISTORY	1L1T:TR9/11		FRE273
FRE374	FRENCH STYLISTICS	1L1T:TR9/2		FRE274
FRE390	INDEPENDENT STUDY	ARR		FRE470
FRE420	FR NOVEL 1800-1950	1L1T:MW3		S
FRE422	FR POETRY 1800-1950	1L1T:TR2		S
FRE425-469	INTER-COLLEGE OPTION	ARR		FRE380
FRE471	ADV WRITTEN & ORAL EXP	2T:TR12		FRE440
FRE474	ADV STYLISTICS	1L1T:TR1		FRE452
FRE475	COMPARAT STYLISTICS	1L1T:TR3		–
FRE476	SEMANTICS	1L1T:TR12/MW1		FRE350
FRE485	FRENCH CINEMA	3T:MW4F1		FRE390
FRE490	INDEPENDENT STUDY	ARR		FRE470
FSC200	COMMUNICATIONS	2L:T4-6,1T:F1		–
FSE200	ENVIRONMTL STUDIES I	2L:M4-6,1T:N		S
FSE300	ENVIRONMTL STUDIES II	2T:T4-6		–
FSM200	MODERNIZATION & COMMUNITY I	2L1T:N		S
FSM300	MODERNIZATION & COMMUNITY II	2T:N		–
FSR200	REVLTN AS CULT TRANSFORMTN	2T:T4-6		FSR100, 200
FSR300	REVLTN AS SOC UPHEAVAL	2L1T:M4-6,F1		HIS348
FSR400	CONTEMP REVOLTNRY CHANGE	2T:W4-6		–
FST200	THEORY METHOD & PRACTICE I	2T:N		S
FST300	THEORY METHOD & PRACTICE II	2T:N		–
GER105	SCIENTIFIC GER READING	3T:MWF9/12		S

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
GER110	LANGUAGE PRACTICE	2L2P:MWF11,T4		GER140
GER120	MODERN LIT	2L1T:MWF9		GER121
GER130	19 & 20 CENT LIT & LANG PRAC	2L1T:MWF2		GER120
GER201	GER LIT IN TRANSLTN	2L:TR9		GER101
GER205	INTER GER READINGS	3T:MWF12		GER220
GER210	LANGUAGE PRACTICE	3T:MWF9	GER231	GER242
GER220	ENLTNMT-STURM & DRANG	2L1T:MWF10		GER240
GER230	ROMANTICISM & LANG PRAC	2L1T:MWF11		GER221
GER231	LANG PRAC & READING	1L2T:MWF9	GER210	GER241
GER305	ADVANCED READING	3T:MWF12		–
GER311Y	LANG PRACTICE	1L1P:TR2		-
GER320	AGE OF GOETHE	2L1T:MWF11		S
GER321	19 CENT PROSE & POETRY	2L1T:MWF10		–
GER322	MID HIGH GERMAN	2L1T:MWF2		S
GER410	LANG PRACTICE	3T:MWF2		–
GER411Y	LANG PRACTICE	1L1P:TR11		–
GER420	PROSE & POETRY 1885-1945	2L1T:MWF12		–
GER421	MODERN DRAMA	2L1T:MWF3		GER301
GER422	CONTEMPORARY LIT	2L1T:MWF1		–
GGR100	INTRO PHYSICAL	2L:MW11,1T:N		S
GGR101	ENVIRONMENT & MAN	2L:TR3,½T:N		S
GGR200F	PLEISTOC GEOMORPH	3L:MWF11		–
GGR201S	PLEISTOCENE GEOG	3L:MWF11		–
GGR203S	WORLD CLIMATE	2L1T:MWF2		-
GGR205F	PEDOLOGY	2L1T:MWF2		S
GGR207F	AIR PHOTO INTERPRET	1L:R1,2P:F9-11		–
GGR208S	PHOTOGRAMMETRY	1L:R1,2P:F9-11		GGR304S
GGR220	REGIONAL ECON ANAL	2L:TR11,1T:N		S
GGR224	INTRO URBAN GEOG	2L:TR2,½T:N		S
GGR240	GEOG INTERP OF CAN	2L:MW10,½T:N		S
GGR242	GEOG LAT AMER	2L:TR3,½T:N		S
GGR245	AFRICA	2L:TR10		-
GGR248	HIST GEOG OF CANADA	1L:T9,1T:N		GGR348
GGR270	INTRO ANALYTIC METHODS	3L:MWF3	STA Group	S
GGR280F	CARTOGRAPHY INTRO	3L:W4,R9-11		–
GGR281S	CARTOG WORKSHOP	1L:W4,2P:R9-11		–
GGR301	QUANTIT GEOMORPHOL	2L:M4-6		S
GGR302F	STAT CLIMATOLOGY	2L:F9-11		–
GGR303S	STAT CLIMATOL WKSHP	2L:F9-11		–
GGR305S	PLANT GEOG	2L:W4-6		–
GGR320	PHIL OF GEOG	2L:TR12		S
GGR322F	POPULATION GEOG	1L:F1,1T:T/W4-6		S
GGR325S	SPATIAL & LOC THEORY	2L:TR3		–
GGR326F	IND LOC THEORY ANAL	2L:TR3		S
GGR328S	TRANSPORT SYSTEMS	2L:W4-6		S
GGR331F	AGRIC SYSTEMS	3L:MWF3		–
GGR334S	WATER RESOURCES	3L:MWF3		S
GGR336F	N. AMER URB GEOG I	2L:R4-6		S
GGR337S	N. AMER URB GEOG II	2L:R4-6		GGR324F

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
GGR338F	CITIES IN DEV COUNTRIES	2L:M4-6		S
GGR343	CHINA	3L:MWF11		S
GGR344	U.S.S.R.	3L:MWF12		S
GGR350S	CAN GEOG SEMINAR	2L:M4-6		–
GGR370F	GEOG LINEAR MODELS	2L:T9-11		S
GGR371S	MULTIVAR STAT METHODS	2L:T9-11		S
GGR372S	SPATIAL PROBABILITIES	2L:W9-11		–
GGR375F	COMBIN PROGRAMMING I	2L:R9-11		GGR330
GGR376S	COMBIN PROGRAMMING II	2L:R9-11		GGR330
GGR390F	PHYS GEOG FIELD METH	2P:W9-11+Field		GGR390
GGR391F	EC SOC FIELD METH	2P:W9-11+Field		GGR390
GGR491	THESIS	ARR		GGR390
GLG100	INTRO GEOLOGY	2L:MW1,2P:W2-4	GLG120	S
GLG120	GEOL PRINCIPLES	2L:WF12,1T:M12, 2P:T9-11/F1-3	GLG100	S
GLG121F	GEOL RECORD OF EVOLUTION	2L:TR11		S
GLG220	MINERALOGY	2L:TR4,4P:R9-1		S
GLG221Y	GEOL DATA PROC BY COMPUTER	3P:W9-12	STA Group	S
GLG320	PETROLOGY I	2L:MW1,3P:R9-12		S
GLG321	STRATIGRAPHY	1L:F1,3P:W9-12		S
GLG322	TECTONICS	1L:W4,3P:F9-12		S
GLG323Y	SYSTEMATIC MINERALOGY	2L:TR1		S
GLG324	PHYS GEOCHEMISTRY	3L:MWF3		S
GLG325	INVERT MACROPALAEONTOLOGY	1L:M4,3P:T9-12		S
GLG326Y	VERT MACROPALAEONTOLOGY	2P:M9-11		S
GLG370Y	X-RAY CRYSTALLOGRAPHY	2P:T9-11		S
GLG371Y	ROCK & MINERAL ANAL	4P:M9-1		S
GLG372Y	MINERAL IDENT LAB	2P:T11-1		S
GLG420	PETROLOGY II	2L:TR9,3P:M2-5		S
GLG421	MINERAL DEPOSITS	2L:TR11,3P:W2-5		S
GLG423	THERMODYNAMICS	2L:TR10		S
GLG424	STRATIGR PALAEONTOLOGY	2L:TR12,2P:M9-11		S
GLG425	MICROPALAEONTOLOGY	2L:TR10,3P:F2-5		S
GLG426	ADV VERT PALAEONTOLOGY	1L:F1,3P:R2-5		S
GLG427F	STRUCT PETROLOGY	2L:TR1,2P:W9-11		–
GLG428	PETROLEUM & GROUNDWATER	2L:MW1,3P:T2-5		–
GLG470	LAB RESEARCH	ARR		S
GLG490	GRAD COURSE	ARR		–
GLL190	GR & ROM REL & MYTHOL	2L1T:MWF11		S
GLL200	GRK & ROM DRAMA IN TRANSL	2L1T:MWF9		GLL191
GLL201F	LYRIC POETRY IN TRANSL	2L1T:MWF10		–
GLL202S	SATIRE & ANC NOVEL IN TRANS	2L1T:MWF10		–
GLL300	GK & ROM PHIL	2L1T:MWF12		–
GRH100	GREEK & ROMAN CIV	2L:TR9/11,1T:N		GRH190
GRH190	URBAN ENVIR GRK WORLD	3T:MWF2		–
GRH201	GK HIST TO ALEXANDERS DEATH	2L1T:MWF12		GRH100
GRH202	ROMAN HIST TO 31 B.C.	2L1T:MWF3		GRH200

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
GRH203	ROMAN EMPIRE	2L1T:MWF9		GRH202
GRH210	ATHENIAN DEMOCRACY	2T:TR12		GRH216
GRH211F	ALEXANDER	2T:TR1		–
GRH212	ROMAN REVOLUTION	3T:MWF2		GRH211
GRH213S	CONSTANTINE	2T:TR1		–
GRH214	ROMAN EMP DECLINE & FALL	2T:TR3	GRH203	–
GRH215	GK HIST FIFTH CENTURY	2L1T:MWF11		GRH210
GRH310	ARCHAIC GREECE	2T:MW1		–
GRH311	GREEK POLIT THOUGHT	2T:TR9		–
GRH312	ROMAN IMPERIALISM	2T:TR10		–
GRH313	JULIO-CLAUDIAN EMPERORS	2T:TR11		–
GRH314	RELIGION IN ROMAN EMP	2T:TR12		–
GRH315	JEWS IN GK ROM HIST	2T:TR2		–
GRH316	GK & ROMAN EDUCATION	2T:TR3		–
GRH317	MOD ANAL GK & ROM HIST	2T:TR1		–
GRH410	POLITICS IN ROMAN REPUB	2T:TR9		–
GRH411	ROMAN LAW	2T:TR10		–
GRH412	THUCYDIDES	2T:TR11		–
GRH413	POLYBIUS	2T:TR12		–
GRH414	AMMIANUS MARCELLINUS	2T:TR2		–
GRH415	SOC ECON HIST OF ANC WORLD	2T:MW1		–
GRH416	SCI TECHNOL IN ANC WORLD	2T:TR1		–
GRK100	INTRO GREEK	4T:MTWR1/MWF9,F1		S
GRK120S	ODYSSEY & LANG STUDY	3T:MWF10		S
GRK121S	ARISTOPHANES CLOUDS & LANG	3T:MWF3		S
GRK122F	PLATO APOLOGY & LANG STUDY	3T:MWF10		S
GRK123F	ATHENIAN SOC IN SPEECHES	3T:MWF3		S
GRK220	GREEK TRAGEDY	3T:MWF2		S
GRK221	GREEK PROSE LIT	3T:MWF9		S
GRK320	GREEK EPIC	2L1T:MWF10		–
GRK321	INTRO TO PLATO	2L1T:MWF11		GRK322
GRK322	GREEK HIST TO 479 B.C.	2L1T:MWF12		GRK320
GRK420	GREEK DRAMA SEMINAR	2L1T:MWF9		GRK321
GRK421	GREEK PHIL SEMINAR	2L1T:MWF10		GRK322
GRK422	GREEK HIST 479-404 B.C.	2L1T:MWF11		GRH421
GRK423	GREEK LYRIC POETRY	2L1T:MWF12		GRK422
GRK430F/S	GREEK PROSE COMP	1T:ARR		GRK423
HIS100	INTRO HISTORICAL STUDY	1½L:MWF11/2/3,2T:N		S
HIS220	MEDIAEVAL SOCIETY	2L:TR11,1T:N		S
HIS230	ENGLAND 15-17 CENTURY	2L:TR3,1T:N		S
HIS231	BRITAIN 19-20 CENTURY	2L:TR9,1T:N		S
HIS232	BRIT IMP EXPERIENCE	2L:TR12,1T:N		HIS330
HIS240	EUROPE 1500-1815	2L:TR9		S
HIS241	EUROPE SINCE 1815	2L:TR2,1T:N		S
HIS250	RUSSIAN HIST	2L:MW1,1T:N		S
HIS260	PRE-CONFED CANADA	2L:TR12,1T:N	HIS262	–
HIS261	POST-CONFED CANADA	2L:TR1,1T:N	HIS262	–
HIS262	POL SOC ECON HIST CANADA	2L:TR10	HIS260/1	HIS300

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
HIS270	DVPT AMER THOUGHT SOCIETY	2L:TR10,1T:N	HIS271	–
HIS271	U.S.A. SINCE 1763	2L:TR10,1T:N	HIS270	–
HIS280	CHINA & JAPAN	2L:TR10,1T:N	EAS102	EAS102
HIS290	LATIN AMERICA	2L:MW1,1T:N		S
HIS320	SCI IN INTELL HIST	2L1T:MWF12		S
HIS325	MEDIAEVAL ENG POL & SOC	2L:MF11,1T:N		S
HIS327	BYZANTINE EMPIRE	2L:MW9,1T:N		–
HIS335	REL & ENG SOC 1785-1875	2T:W4-6		HIS435
HIS336	18 CENT ENGLAND	1L:M10,1T:N		S
HIS338	20 CENT BRITAIN	1L:M1,1T:N		–
HIS341	ITALY SINCE 1789	1L:M3,1T:W/F3		–
HIS342	EUR INTELLECTUAL HIST	2L:MW1,1T:N		S
HIS343	REFORMATION EUROPE	2L:F:TR4,S:T/R4-6		–
HIS345	FRANCE & EUROPE 1589-1715	2T:W4-6		S
HIS346	REVOLUTNRY IDEA IN FRANCE	2T:W4-6		–
HIS349	EUROPEAN URBAN HIST	1L:T11,1T:N		–
HIS350	EAST CENTL EUROPE TO 1939	2L:WF2,1T:N		S
HIS361	CAN ECO DVPT SINCE 1850	3L:MWF3		S
HIS362	CAN NATIONALISM	3L:MWF11		S
HIS363	20 CENTURY CANADA	2L:MW9,1T:N		–
HIS364	CANADA & WAR 1868-1967	2T:W4-6		S
HIS366	CANADA 1850-1900	2T:W4-6		S
HIS367	CAN-AMER RELATIONS	2T:W4-6		S
HIS370	AMER POL TRADITION	2L:TR2,1T:N		S
HIS371	AMER NATIONALISM	1L:W11,1T:M/F11		–
HIS372	20 CENTURY U.S.A.	3L:MWF1		S
HIS376	AMER LABOUR HISTORY	2T:W4-6		S
HIS378	ETHNICITY IN AMER HIST	2T:W4-6		–
HIS380	CHINA SINCE 1550	2L:TR3,1T:N		S
HIS381	JAPAN SINCE 1550	2L:MW10,1T:N		S
HIS391	LATIN AMER HIST PROBLEMS	2L:TR1,1T:N		–
HIS426	MEDIAEVAL INTELLEC HIST	2T:T4-6		S
HIS428	ENG MEDIAEVAL HIST	2T:M9-11		–
HIS434	ENG GOVT SOC 17 CENTURY	2T:T11-1		–
HIS436	VICTORIAN ENGLAND	2T:R4-6		–
HIS444	FRENCH IN CONTEMP WORLD	2T:R11-1		S
HIS445	STUDIES IN HIST OF REVOLTNS	2T:M4-6		HIS348
HIS446	AGE OF ENLIGHTENMENT	2T:W9-11		S
HIS447	19 CENT INTELLECTUAL HIST	2T:M7:30-9:30 p.m.		S
HIS448	GERMANY SINCE 1806	2T:T4-6		S
HIS449	INTERNAT CO-OP & CONFLICT	2T:W4-6		S
HIS458	RUSSIA FOREIGN POLICY	2T:W4-6		S
HIS459	MODERN RUSSIA	2T:R11-1		–
HIS461	POL & SOC IN CAN & U.S.A.	2T:M4-6		–
HIS464	QUE & LOWER CANADA 1760-1840	2T:R4-6		S
HIS465	CANADA 1800-1867	2T:T7:30-9:30 p.m.		HIS365
HIS467	POWER IN 20 CENT CANADA	2T:R4-6		–
HIS468	CANADA IN WORLD WAR II	2T:T4-6		S
HIS474	U.S. SOUTH ANTEBELLUM	2T:W4-6		HIS374
HIS478	20 CENT AMER DIPLOMACY	2T:T4-6		S

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
HIS482	CHINA EXTL RELS SINCE 1834	2T:T11-1		–
HIS483	COLLAPSE OF CHIN EMP	2T:R11-1		S
HIS484	MODERN JAPAN	2T:W4-6		S
HIS485	GOVT IN CLASSICAL GREECE	2T:M4-6		S
HIS486	ROME REPUB TO PRINCIPATE	2T:M4-6		S
HIS491	SOC HIST LATIN AMER	2T:T4-6		S
HIS492	BRAZIL	2T:W9-11		S
HPS100	HIST OF SCIENTIFIC IDEAS	2L:TR1,1T:N		S
HPS201	HIST TECHNOL ENGINEERING	2L:TR12,1T:N		S
IND424	OPERATIONAL RES	Scheduled by Faculty of Applied Science and Engineering		–
IND429F	SYSTEM SIMULATION			S
IND430S	INFO & OPTIMIZATION			S
IND476F	STOCHASTIC MODELS			IND419
IND483S	MATH PROGRAMMING			IND419
ISL102	ISLAMIC LIT IN TRANSL	2L:TR1		S
ISL103	SUFI LORE	1L1T:TR12		–
ISL105S	ISLAMIC ART	2L1P:MWF2		S
ISL200	HIST INTRO ISLAMIC WORLD	2L:MW1		ISL101
ISL201F	ISLAMIC HIST TO A.D. 861	2T:TR1		–
ISL202F	ISLAM VS CHRISTENDOM	2T:MW1		–
ISL203S	ISLAMIC HIST A.D. 861-1258	2T:TR1		–
ISL204S	MONGOLS	2T:MW1		–
ISL210F	ISLAMIC REL SOC INSTIT	2L:TR10		ISL201
ISL211S	ISLAMIC POLIT INSTIT	2L:TR10		ISL201
ISL212	ISL LIT IN CULT SETTING	2T:TR12		ISL102
ISL213	INTRO ISLAMIC CIV	2L:TR9		ISL103F, 206F
ISL214	INTRO STANDARD ARABIC	3T1P:MTWF3		ISL100
ISL215	INTRO PERSIAN LANG	3T1P:MTWF11		ISL203
ISL216	INTRO TURKISH LANG	3T:MWF10,1P:T9		ISL204
ISL217S	ARABIC LIT IN N. AMER	2L:TR2		
ISL220	INTERMED STD ARABIC	3T1P:MTWF2		S
ISL300F	OTTOMAN EMP & MOD TURKEY	2T:TR10		–
ISL301F	MUSLIM INDIA & PAKISTAN	2T:MW1		–
ISL302S	ARAB WORLD SINCE 1520	2T:TR10		–
ISL303S	SAFAVID EMP & MOD IRAN	2T:TR1		–
ISL304S	ISLAMIC N AFR HIST	2T:MW1		–
ISL310	ISLAM MYSTICISM	2L:TR3		–
ISL312S	ISLAM THEOL & PHIL	2L:TR1		–
ISL321	ADV STD ARABIC I	3T:MWF10		–
ISL322	INTERMED PERSIAN LANG	3T:MWF12		ISL424
ISL323	INTERMED TURKISH LANG	3T:MWF3		ISL426
ISL325	COLLOQUIAL ARABIC I	2T1P:MWF12		ISL322
ISL326	COLLOQUIAL PERSIAN	2T1P:MWF9		–
ISL327	COLLOQUIAL TURKISH	2T1P:MWF11		–
ISL425	ADV STD ARABIC II	3T:MWF11		–
ISL426	ADV PERSIAN LANG	3T:MWF10		–

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
ISL427	ADV TURKISH LANG	3T:MWF12		–
ISL429	COLLOQUIAL ARABIC II	2T1P:MWF2		ISL422
ISL432F	MEDIAEVAL ISL WORLD SEMINR	2T:TR11		ISL423
ISL433S	WEST IMPACT MUSLIM SOC	2T:TR11		ISL423
ITA100	BEGINNING ITALIAN	4L1P:MTWRF9/ 10/11/12/2	ITA120/121	S
ITA120Y	LANGUAGE PRACTICE	2T:TR9/10/12/3	ITA100	ITA120
ITA121Y	20 CENT LIT	1L½T:TR11/2/3	ITA100	ITA120
ITA140	ITALY IN 20 CENT	1L1T:TR4		S
ITA141	ORAL PRACTICE	2T:TR9/10/11/12	ITA120/121	S
ITA190Y	ESSAYS IN ITALIAN	ARR	ITA100/120	–
ITA195	ITALIAN READING	1L:F1		S
ITA220Y	INTERMEDIATE ITALIAN	2T:TR10/11/2/3	ITA221/290	ITA220,1
ITA221Y	EXPOSITORY WRITING	1T:F1	ITA220/290	ITA220,1
ITA222Y	19 & 20 CENT NOVEL	2L:TR9/10/1		ITA220,1
ITA223F	19 & 20 CENT THEATRE	2L1T:MWF10/11/3		ITA220,1
ITA224S	19 & 20 CENT POETRY	2L1T:MWF10/11/3		ITA220,1
ITA290Y	ESSAYS MOD ITAL AUTHORS	ARR	ITA220/221	–
ITA320Y	LANG PRACTICE	1½T:TR9/2		ITA390
ITA321	LIT OF MIDDLE AGES	2L1T:MWF9/12/3		ITA300
ITA322F	ITAL LINGUISTICS	2L1T:MWF10		–
ITA323S	RENAISSANCE THOUGHT	2L1T:MWF10		ITA322
ITA324F	BAROQUE POETRY & DRAMA	2L1T:MWF12		ITA424
ITA325F	18 CENT THEATRE	2L1T:MWF2		ITA323
ITA420	RENAISSANCE POETRY	2L1T:MWF11		ITA320,1
ITA421S	RENAISSANCE THEATRE	2L1T:M4TR2		–
ITA422S	CONCEPTS OF THE BAROQUE	2L1T:TR1,T4		ITA424
ITA423S	18 CENTURY THOUGHT	2L1T:MWF1		ITA426
ITA424F	DANTES PARADISO	2L1T:MWF1		ITA423
ITA425S	13 CENTURY POETRY	2L1T:MWF12		ITA427
ITA426Y	19 & 20 CENTURY NOVEL	1L½T:TR10		ITA421
ITA427S	19 & 20 CENTURY POETRY	2L1T:MWF9		ITA422
ITA428F	19 & 20 CENTURY THEATRE	2L1T:MWF9		ITA421
ITA429F	STYLISTICS	2L1T:MWF3		–
ITA430S	HIST OF ITAL LANGUAGE	2L1T:MWF3		ITA420
ITA431S	MODERN LIT CRITICISM	2L1T:TR12,W4		ITA425
JAH324	PEASANT FEUDAL INSTITUTS	1L:M10,2T:WF10		–
JAL100	INTRO GEN LINGUISTICS	2L:TR2,1T:N		LIN100
JAL300	SOCIOLINGUISTICS	2L:TR10		LIN302
JAP343	AFRICA IN TRANSITION	1L1T:TR1		POL309
JBM350	VIROLOGY	2L:TR2,3P:T9-12		MBL471
JMC300	MOD CHINA IN REVOL	2L:R4-6		POL303
JMC400	SOC CHANGE IN MOD CHINA	2T:M2-4		POL403
LAT100	INTRO LATIN	4T:MTWR12		S
LAT120F	CATULLUS	3T:MWF12		S
LAT121S	HORACE	3T:MWF12		S

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
LAT122F	LIVY	3T:MWF9		S
LAT123S	CICERO	3T:MWF9		S
LAT130	INTERMEDIATE LATIN	3T:TRF1		S
LAT220	REPUBLICAN COMEDY & EPIC	3T:MWF11		S
LAT221	CICERO & SALLUST	3T:MWF10		S
LAT222	CHRISTIAN & MEDIAEVAL LAT	3T:MWF1		S
LAT320	VIRGIL	2L1T:MWF2		–
LAT321	AUGUSTAN AGE LIT	2L1T:MWF3		LAT320
LAT322	SATIRE	2L1T:TR4F1		LAT421
LAT420	ROMAN HIST TO A.D. 68	2L1T:MWF1		LAT420
LAT421	POST AUGUSTAN PROSE	2L1T:M4TR2		LAT423
LAT422	ROMAN RHETORIC	2L1T:		–
LAT423	ROMAN PHILOSOPHY	2L1T: 2 to be offered,		–
LAT424	ROMAN DRAMA	2L1T: times MWF9/2/3		–
LAT425	POST AUGUSTAN POETRY	2L1T:		
LAT430F/S	PROSE COMP	1T:ARR		LAT422
LAT431F/S	GK LAT COMPAR PHILOLOGY	1T:ARR		–
LIN201	LANG LEARNING	1L2P:MWF3		S
LIN228F	PHONETICS	1L2P:MWF9		–
LIN229S	PHONEMICS	2L:WF9		–
LIN230	MORPHOLOGY & SYNTAX	2L:MW1		–
LIN333	STRUC OF ENGLISH	2L:TR1		–
LIN348	LANG HISTORY	2L:TR11		–
LIN491	ADV LINGUISTICS	ARR		–
LIT310	MOD LIT	3T:MWF12		S
Note: No two of MAT 110, 130, 134, 135, 139, 150 may be combined in any degree programme.				
MAT100	INTRO TO MATH	2L:TR12,2T:M11-1/M3-5		S
MAT110	CALCULUS	2L:TR10,2T:F1-3/3-5		S
MAT120	GENERAL MATH	2L:TR10,2T:F1-3/3-5		S
MAT130	CALCULUS	2L:TR10,2T:F1-3/3-5		S
MAT134	CALCULUS FOR SOCIAL SCI	2L:TR10,2T:F1-3		S
MAT135	CALCULUS FOR SCIENTISTS	2L:TR10,2T:F3-5		S
MAT139	CALC & LINEAR ALGEBRA	2L:TR10,2T:F3-5 (+F1-3 for studs. without XIII MAT B)		S
MAT140	LINEAR ALGEBRA & GEOM	2L:TR11,1T:F4		S
MAT150	ANALYSIS I	2L:TR10,2T:F2-4		S
MAT220	CLASSICAL & MOD ANALYSIS	2L1T:MWF11		S
MAT224S	SET THEORY & LOGIC	2L1T:MWF10		S
MAT225	LINEAR ALGEBRA	2L:TR1,2T:F4-6	MAT140	S
MAT230	ADVANCED CALCULUS	2L1T:MWF2	MAT234/ 5/9/50	S
MAT234	ADV CALC FOR SOCIAL SCI	2L1T:MWF2	MAT230/ 5/9/50	S
MAT235	ADV CALC FOR SCIENTISTS	2L1T:MWF2	MAT230/ 4/9/50	S
MAT239	ANALYSIS	2L1T:MWF2	MAT230/ 4/5/50	S

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
MAT240F	LINEAR ALGEBRA	2L1T:MWF12		S
MAT244F	DIFF EQUATIONS	2L1T:MWF9	APM251	S
MAT245S	GEOMETRY I	2L1T:MWF12	MAT325	S
MAT250	ANALYSIS II	2L1T:MWF2	MAT230/ 4/5/9	S
MAT300	ALGEBRA	2L1T:MWF11	MAT340/5	S
MAT314F	POINT-SET TOPOLOGY	2L1T:MWF2	MAT339/50	MAT330
MAT319S	INTRO COMPLEX ANALYSIS	2L1T:MWF2	MAT330/9	MAT330
MAT325	GEOMETRY	2L1T:MWF9	MAT245S	MAT325
MAT330	COMPLEX ANALYSIS	2L1T:MWF2	MAT319S/339	MAT355
MAT339	ADVANCED ANALYSIS	2L1T:MWF2	MAT314F/9S/ 30/50	S
MAT340	ALGEBRA I	2L1T:MWF11	MAT300/45	S
MAT345	ALGEBRAIC STRUCTURES	2L1T:MWF11	MAT300/40	S
MAT350	REAL ANALYSIS	2L1T:MWF12	MAT314F/339	S
MAT364F	DIFF GEOMETRY	2L1T:MWF10		MAT360
MAT369S	INTRO TO MANIFOLDS	2L1T:MWF10		MAT360
MAT399Y	INDEPENDENT WORK	ARR		–
MAT404F	FOUNDATIONS	2L1T:MWF9		MAT400
MAT409S	MATH MODELS IN LINGUISTICS	2L1T:MWF9		–
MAT410	HISTORY OF MATH	2L:M5-7		S
MAT414F	INTRO TO NUMBER THEORY	2L1T:MWF3		MAT445
MAT419S	NUMBER THEORY	2L1T:MWF3		MAT445
MAT424F	GEOMETRY II	2L1T:MWF2		MAT450
MAT425	ALGEBRAIC TOPOLOGY	2L1T:TR3,W4		S
MAT429S	CLASSICAL ALGEBRAIC GEOMETRY	2L1T:MWF2		–
MAT434F	ADV COMPLEX ANALYSIS	2L1T:MWF10		MAT430
MAT439S	DIFF EQUATIONS	2L1T:MWF10		MAT435
MAT444F	HOMOLOGICAL ALGEBRA	2L1T:TR2,F1		MAT440
MAT449S	ALGEBRA II	2L1T:TR2,F1		MAT440
MAT454F	ABSTRACT INTEGRATION	2L1T:MWF11		–
MAT459S	FUNCTIONAL ANALYSIS	2L1T:MWF11		–
MAT464F	COMBINATORIAL THEORY	2L1T:MWF10		MAT455
MAT480F	GRAD LEVEL COURSE	2L1T:ARR		–
MAT484F	TOPICS IN ALG/GEOM	ARR		–
MAT485S	GRAD LEVEL COURSE	ARR		–
MAT489S	TOPICS IN ALG/GEOM	ARR		–
MAT490F	TOPICS IN ANALYSIS	ARR		–
MAT495S	TOPICS IN ANALYSIS	ARR		–
MAT499	READINGS IN MATH	ARR		MAT499
MBL200	INTRO MICROBIOL	2L2P:TR9-11		S
MBL220	GENL MICROBIOL	2L4P:MW9-12		S
MBL300Y	APPLIED MICROBIOL	2L:TR1		–
MBL320	MICROBIAL PHYSIOL	2L:MW1,3P:M3-6		MBL370
MBL321	MICROBIAL STRUC	1L:R4,3P:F2-5		MBL470
MBL400	PATHOGENIC MICRO	2L:TR11		MBL420
MBL420	BIOL OF ANIMAL VIRUS	1L2T:T2-5		MBL471
MBL421	IMMUNOLOGY	1L2P:W2-5		MBL472
MBL422	MICROBIOL STATS	2L:ARR		MBL473

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
MBL423	ADV MICROBIAL BIOCHM	3T:M2-5		MBL475
MBL424	MICROBIAL GENETICS	2L2P:ARR		MBL476
MBL425	PROJECT	ARR		MBL498
MUS100	MUSIC AS A LIT	2L:MW11,1T:N		S
MUS120	MATLS OF MUSIC I	2T:TR1,2P:N		S
MUS222	17 & 18 CENT MUSIC	2T2P:MWF2,F1		MUS221
MUS223	CONTEMP MUSIC	2L:MW3,1T:F3/4		–
MUS240	MATLS OF MUSIC II	2T2P:MTWF3		S
MUS322	19 & 20 CENT MUSIC	Sch. by Fac. Music		–
MUS323	INSTRUMENTAL MUSIC	2L:MW12,1T:F12		MUS220,300
MUS325	N. AMER MUSIC			–
MUS329	MUSIC CRITICISM			–
MUS340Y	COUNTERPOINT 18 CENT	Scheduled by the Faculty of Music		–
MUS343Y	ACOUSTICS			–
MUS344Y	KEYBOARD HARMONY			–
MUS345	ORCHESTRATION			–
MUS348Y	COUNTERPOINT 16 CENT			–
MUS422	MEDIAEVAL & REN MUSIC			–
MUS423	VOCAL MUSIC	2L:MW9,1T:F9		–
MUS424	BEETHOVEN			–
MUS428	SCHOENBERG			–
MUS429	OPERA	Scheduled by the Faculty of Music		–
MUS440Y	FUGUE			–
MUS441Y	ANALYTIC TECHNIQUE			–
MUS442Y	CONTEMP ANALYSIS			–
MUS443	ETHNOMUSICOLOGY			–
NES100	INTRO ANC NR EAST	1½L1T:MWF2	NES271/2 same year	NEH111
NES141	INTRO CLASSICAL HEBREW	3T:MWF1	NES142 same year	NLA141
NES142	INTRO MODERN HEBREW	2T2P:MWF10, F1/MTWR1	NES141 same year	NLA151
NES211	INTRO AKKADIAN LANG	3T:MWF11		NLA211
NES221	INTRO ARAMAIC-SYRIAC LANG	3T:MWF11		NLA221
NES231	INTRO MID EGYPTIAN LANG	3T:MWF11		NLA231
NES241	INTER CLASSICAL HEBREW	3T:MWF10		NLA241
NES242	INTER MODERN HEBREW	3T:MWF10/3		–
NES251	INTRO HELLENISTIC GRK	3T:MWF2		NLA261
NES261	BIBLICAL LIT IN TRANSL	1L1T:TR12		NEH241
NES262	JEWISH CLAS IN TRANSL	1L1T:TR11		–
NES271	ANCIENT EGYPT	1L1T:TR4		NEH221
NES281F	NR EAST PREHIST	1L1T:TR2		NEH211F
NES282S	ANC NR EAST ART ARCH	1L1T:TR2		NEH212S
NES311	INTER AKKADIAN LANG	3T:MWF10		NLA430
NES321	INTER ARAMAIC LANG	3T:MWF9		NLA432
NES331	INTER EGYPTIAN LANG	3T:MWF9		NLA433

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
NES341	PROPHETIC LIT & THOUGHT	2T:TR9		NLA301,21
NES342	CLASS HEBREW LIT	2T:TR3		–
NES351	INTER HELLENISTIC GK	2T:TR12		GRK450
NES361	ISR LIT TO A.D. 200 TRANSL	1L1T:MW1		NLI300
NES411	ADV AKKADIAN LANG	3T:MWF12		–
NES421	SYRIAC TEXTS	3T:MWF3		–
NES431	ADV EGYPTIAN LANG	3T:MWF12		–
NES441	THE PSALMS	2T:MW1		NLA420
NES443	EARLY POST BIB HEBREW	2T:TR9		NLA425
NES451	ADV HELLENISTIC GRK	2T:TR10		–
NES461	APOCALYPTIC LIT IN TRANSL	1L1T:TR11		–
NES471	NR EAST HIST TO 30 B.C.	1L1T:TR2		NEH300,20
NES481	ANC NR EAST ARCHAEOL	2T:TR3		–
PHL100	INTRO PHIL	2L:TR11/MW1,1T:N		S
PHL150	INTRO PHIL PROBLEMS	2L1T:MWF10/11		S
PHL151	CLASSICAL PHIL	2L:TR3,1T:N		S
PHL200F	INTRO ETHICS	2L:TR9/10/11		S
PHL200S	INTRO ETHICS	2L:TR12/2/3		S
PHL201F	HISTORY OF ETHICS	2L:TR2/3		–
PHL201S	HISTORY OF ETHICS	2L:TR10/11		–
PHL202F	POLITICAL PHIL	2L:TR10		S
PHL202S	POLITICAL PHIL	2L:TR11		S
PHL203F	HIST OF POLITICAL PHIL	2L:TR11		–
PHL203S	HIST OF POLITICAL PHIL	2L:TR10		–
PHL204S	CONTEMP SOC ISSUES	2L:TR9/3		–
PHL205F	PHIL OF RELIGION	2L:TR10/1		PHL203F
PHL206F	MOD SYMBOLIC LOGIC	2L:TR11/1/2/MW1		S
PHL206S	MOD SYMBOLIC LOGIC	2L:TR11/1/2/MW1		S
PHL207S	INDUCTIVE LOGIC	2L:TR1/MW1		PHL208S
PHL208F	AESTHETICS	2L:TR10/12/1/3		PHL204F
PHL209F	INTRO PHIL OF MUSIC	2L:TR12		–
PHL210S	PHIL IN LIT	2L:TR1/MW1		PHL205S
PHL211F	PLATO & PREDECESSORS	2L:TR10/12/1		PHL209F
PHL212S	ARISTOTLE & LATER PHIL	2L:TR10/12/1		PHL210S
PHL213F	17 CENT THOUGHT	2L:TR10/12/1		–
PHL214S	18 CENT THOUGHT	2L:TR10/12/1		–
PHL215F	EXISTENSM PHENOM	2L:TR9/10/3/MW1		PHL213S
PHL216F	ANALYTIC PHIL	2L:TR10		–
PHL217F	THEORY OF KNOWLEDGE	2L:TR11		–
PHL218F	INTRO METAPHYSICS	2L:TR9		–
PHL219S	PHIL OF LANGUAGE	2L:TR2		–
PHL220S	PHIL OF MIND	2L:MW1		–
PHL221S	MEDIAEVAL PHIL	2L:TR3		–
PHL222F/S	SPECIAL TOPICS	ARR		–
PHL223S	PHIL OF JUDAISM	2L:TR10		–
PHL250	ETHICS	2L:TR9/2		S
PHL251	LOGIC	2T:TR1		S
PHL252	PHIL OF MAN	2L:TR9		S
PHL253	SOC & POLIT PHIL	2L:TR10/11		S
PHL256	PHIL EXAM OF RELIGION	2T:TR10		S

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
PHL257	AESTHETICS	2T:TR3		S
PHL261	MEDIAEVAL PHIL	2T:TR12		S
PHL262	MODERN PHIL TO KANT	2L:TR11		S
PHL263	ENG PHIL HOBBES TO MILL	2L:MW1		–
PHL270F	EXISTENTIALISM	2L:MW12		–
PHL271S	AMER PHIL	2L:MW12		–
PHL300F	PHIL OF SOCIAL SCI	2L:TR10/2		S
PHL301F	PHIL OF HISTORY I	2L:TR10/11		PHL301
PHL302S	PHIL OF HISTORY II	2L:TR10/11		PHL408, 430
PHL303F	PHIL OF SCIENCE	2L:TR1		PHL302F
PHL304F	PHIL OF LAW	2L:TR12		–
PHL305S	METAPHYSICS	2L:ARR		PHL303
PHL306S	EPISTEMOLOGY	2L:ARR		PHL304S
PHL307F	PLATO	2T:ARR		PHL305F
PHL308S	ARISTOTLE	2T:ARR		PHL306S
PHL309F	DESCARTES & LOCKE	2T:ARR		PHL307F
PHL310S	BERKELEY & HUME	2T:ARR		PHL308S
PHL311F	RATIONALISTS	2L:TR10/12/1		PHL211F
PHL312S	EMPIRICISTS	2L:TR10/12/1		PHL211F
PHL313F	KANT	2L:TR9/2		PHL310S
PHL314F	EPISTEMOLOGY I	2T:ARR		PHL311F
PHL315S	EPISTEMOLOGY II	2T:ARR		PHL312S
PHL316F	19 CENT GERMAN PHIL	2L:TR9		PHL313F
PHL317S	20 CENT BRITISH PHIL	2L:TR9		PHL314S
PHL318S	PHIL OF MUSIC	2L:TR12		PHL400
PHL320S	EXISTENTSM PHENOM	2L:TR9/10/3/MW1		–
PHL321F	CONTEMP ETHICS	2L:TR10		PHL201S
PHL322S	CONTEMP POLIT PHIL	2L:TR10		PHL202S
PHL323F	MARXISM LENINISM	2L:TR12/3		–
PHL324S	REVOLUTNY THOUGHT	2L:TR12/3		PHL430
PHL325S	HEGEL	2L:TR2		–
PHL326S	PHIL OF RELIGION	2L:TR10		–
PHL327S	INTERM LOGIC	2L:TR1		–
PHL328F	PHIL USES OF LOGIC	2L:MW1/TR11		PHL207S
PHL329S	MODAL MANY VAL LOGICS	2L:MW1		–
PHL330S	SET THEORY	2L:TR1		–
PHL331F	MINDS & MACHINES	2L:TR1		–
PHL333F/S	SPECIAL TOPICS	2L:ARR		–
PHL334F/S	SPECIAL TOPICS	2T:ARR		–
PHL335F	PLATO THEORY OF FORMS	2L:TR2		–
PHL336S	ARISTOTLE PHL OF MIND	2L:TR2		–
PHL350	RESEARCH TUTORIAL	ARR		–
PHL351	PHIL OF SCIENCE	2T:R4-6		S
PHL354	EPISTEMOLOGY	2T:MW1		PHL254
PHL355	METAPHYSICS	2T:TR2		PHL255
PHL360	19 CENTURY PHIL	2T:TR12		PHL259
PHL361	PHENOM & EXISTENTLM	2T:TR1		PHL451
PHL362	ANALYTIC PHIL	2T:T4-6		PHL453
PHL370F	MODERN THOMISTS	2T:MW3		–
PHL371S	GREEK PHIL	2T:MW3		–

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
PHL400F	ADV EPISTEMOLOGY	2T:ARR		–
PHL401S	ADV METAPHYSICS	2T:ARR		–
PHL402F/S	ADV POLITICAL PHIL	2T:ARR		PHL402
PHL403S	ADV ETHICS	2T:ARR		–
PHL404S	ADV PHEN EXIST	2T:ARR		PHL403,4
PHL405F	ADV PHIL OF MIND	2T:ARR		PHL405
PHL408F	PHIL OF MATH	2T:ARR		PHL410
PHL409S	PHIL OF PHYSICS	2T:ARR		PHL412
PHL410F/S	PHIL OF PSYCH	2T:ARR		PHL413
PHL411F	ADV PHIL OF SCIENCE	2T:ARR		PHL415
PHL412S	ADV PHIL OF SOC SC	2T:ARR		PHL416
PHL413F/S	HIST OF PHIL TEXTS	2T:ARR		PHL417, 19,22
PHL414F	ADV LOGIC	2T:ARR		PHL424
PHL415F	PHIL OF SPINOZA	2T:ARR		PHL430
PHL416F	AESTHETICS	2T:ARR		PHL400
PHM470	ACTION OF DRUGS	2L:MW1,3P:T2-5		–
PHY100	PHYS & MODERN WORLD	2L1T:MWF12		PHY101
PHY120	MECHANICS	2L:TR9,1T:N, 1½P:M/W2-5	PHY130/40	S
PHY130	MECHANICS, MATTER, WAVES	2L:TR9/11,1T:N (F1-3 for studs. without XIII PHY) 1½P:T/R2-5	PHY120/40	S
PHY140	SELECTED PHYS TOPICS	2L:TR9/11/12, 1T:N,1½P:T/W/R2-5	PHY120/30	PHY135
PHY220	ELECTROMAGNETISM	2L1T:MWF10	PHY230	PHY220A
PHY221F	WAVES	2L½T:MWF11	PHY230	PHY221S
PHY222S	THERMAL PHYSICS	2L½T:MWF11		PHY226S
PHY223F	THEORETICAL PHYS	2L:TR3,1T:N		PHY222F
PHY224S	ELASTICITY & FLUID MECH	2L:TR4		S
PHY225F	GEOPHYSICS	2L:TR4		PHY225Y
PHY226S	ELECTRONICS	2L:TR3		PHY223S
PHY227Y	ELECTROMAGNETISM LAB	3P:R9-12	PHY230	PHY270Y
PHY230	ELECTROMAGNETISM & MOD PHYS	2L:TR2,1½P:T9-12	PHY220/ 221S/227Y	S
PHY300	QUANTUM PHYS	2L:TR3	PHY301	PHY323B
PHY301	ATOMIC NUCLEAR PHYS	2L:TR3	PHY300	PHY310
PHY302	ELECTROMAGNETISM	2L:TR2		PHY322A
PHY303F	THERMODYNAMICS	2L:TR1		PHY321A
PHY304S	SOLID STATE PHYS	2L:TR1		PHY231
PHY305S	NUCLEAR & PARTICLE PHYS	2L:MW1		–
PHY306F	MOLECULAR BIOPHYSICS	2L:MW1		–
PHY307F	ATOM RADIATION PHYS	2L:TR4		PHY460
PHY308	EXPLORATION GEOPHYS	2L:TR12		PHY441
PHY320	MOLEC SOLID STATE LAB	6P:MR9-12	PHY321Y	PHY470
PHY321Y	MOLEC SOLID STATE LAB	3P:R9-12	PHY320	PHY470
PHY322	NUCLEAR PHYS LAB	6P:TW9-12	PHY323Y	PHY470
PHY323Y	NUCLEAR PHYS LAB	3P:T9-12	PHY322	PHY470
PHY324Y	GEOPHYSICS LAB I	3P:F9-12		PHY475
PHY400	QUANTUM THEORY	2L:TR9		PHY433

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
PHY401	STATISTICAL MECH	2L:TR10	PHY402F	PHY421
PHY402F	STATISTICAL MECH	2L:TR10	PHY401	PHY421
PHY403	NUCLEAR PHYSICS	2L:TR11		PHY422
PHY404S	HIGH ENERGY PHYSICS	2L:MW1		PHY422
PHY405	SOLID STATE PHYSICS	2L:TR12		PHY435
PHY406F	RADIATION AND MATTER	2L:TR1		PHY420
PHY407S	MAGNETIC RESONANCE	2L:TR1		–
PHY408F	MOLECULAR PHYSICS	2L:TR2		PHY421
PHY409S	QUANTUM OPTICS	2L:TR2		PHY420
PHY410	RELATIVITY THEORY	2L:TR3		PHY434
PHY411	CLASS PHYS OF CONTINUA	2L:TR11		PHY432
PHY412	PHYS OF THE EARTH	2L:TR3		PHY431
PHY413	GEOPHYS METHODS	2L:TR10		PHY440
PHY414	ATMOSPHERIC PHYS	2L:MW1		PHY430
PHY415S	CELLULAR BIOPHYSICS	2L:TR12		–
PHY416	PLASMADYNAMICS	2L:ARR		–
PHY420Y	GEOPHYSICS LAB II	3P:M2-5		PHY475
PHY421Y	GEOPHYSICS LAB III	3P:W2-5		PHY475
PHY430	PHYSICS RESEARCH	3P:ARR		–
PHY431	SUPERVISED READINGS	ARR		–
PHY432	SEMINAR	ARR		–
PHY433	GRAD COURSE	ARR		–
POL100	INTRO CANADIAN POL	2L:TR10/11/12/ 2/3,½T:N		S
POL101	INTRO POLITICAL SCI	2L:TR1		S
POL200	POLITICAL THEORY	2L:TR9,1T:N		S
POL201	POLITICAL BEHAVIOUR	2L:TR4		S
POL202	POL ECON & PUB POLICY	2L:M4-6,1T:N		S
POL203	U.S. POLITICS & GOVT	2L:MW9,½T:N		S
POL204	USSR POLITICS & GOVT	2L:TR11		S
POL205	BRITISH POL & GOVT	2L:F:MW4,S:M/W4-6		S
POL300	COMPARATIVE GOVT	2L:MW11,½T:F11		S
POL301	COMMONWEALTH POL	2L:TR2		S
POL302	W EUROPE POL & GOVT	2L:W4-6		S
POL304	THIRD WORLD POLITICS	2L:W4-6		S
POL305	LAT AMER POL & GOVT	2L:TR9		S
POL307	POLITICAL ANALYSIS	2L:M4-6		S
POL308	URBAN POLITICS	2L:TR10		–
POL320	MODERN POL THOUGHT	2L:TR3,½T:N		S
POL322	INTRO PUB ADMIN	2L:TR12		S
POL323	CAN GOVT WORKSHOP	2L:M9-11		S
POL324	COMPAR COMMUNISM	2L:MW1		–
POL325	US GOVT & POLITICS	2L:R4-6		S
POL326	INTERNATIONAL RELATIONS	2L:M4-6		S
POL327	COMP FOREIGN POLICY	2L:W9-11		S
POL328	INTERNAT ORGANIZ	2L:R4-6		S
POL329	MARXISM LENINISM	2L:T4-6		S
POL330	POL & PSYCH	2L:T4-6		S
POL400	20 CENT POL THOUGHT	2L:M4-6		S
POL401	ANC & MED POL THOUGHT	2L:M9-11		S

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
POL404	COMP PUBL LAW	2L:W9-11		–
POL408	SCIENCE & GOVT	2L:W4-6		S
POL409	PUBLIC ADMIN	2L:F9-11		S
POL410	POL ECON WELFARE STATE	2L:R4-6		S
POL412	CAN POL SYSTEM	2L:M9-11		S
POL413	PROV & LOCAL GOVT	2L:W9-11		S
POL414	EAST EUR COMPAR POL	2L:R4-6		S
POL415	INTERNATIONAL POL	2L:T2-4		S
POL416	INTERNATIONAL LAW	2L:W4-6		S
POL417	THIRD WORLD	2L:T11-1		S
POL418	WORKSHOP	2L:F9-11		S
POL419	AFRICAN GOVT & POL	2L:M9-11		S
POL421	TOPICS MOD POL THOUGHT	2L:R4-6		–
POL422	DYNAMICS OF SOV POL	2L:W9-11		–
POL440	THESIS	ARR		S
POL441	READING	ARR		S
PRT195	PORTUG READING	1L:F1		S
PRT200	INTRO PORTUGUESE	3L2P:MTWRF2		PRT320
PRT420	INTRO BRAZILIAN LIT	2L2P:MTWR1		PRT420
PSL321	ELEM HUMAN PHYSIOL	2L:TR3	PSL322	S
PSL322	HUMAN PHYSIOL	3L:MWF2	PSL321	PSL422
PSL373Y	HUMAN PHYSIOL LAB	3P:M9-12		PSL473,6
PSL424	ENDOCRINOLOGY	2T:TR11		S
PSL427	ELECTROPHYSIOL	2T:TR12		–
PSL429S	INTEGR PHYSIOL	2T:TR1		–
PSL430	MATH ASPECTS PHYSIOL	2T:MW1		–
PSL475F	SURGERY & PHYSIOL LAB	7P:ARR		S
PSL498	PHYSIOL PROJECT	7P:ARR		S
PST403S	PHYS & FINE STRUCT PARAS	Scheduled by the School of Hygiene		–
PST407	ARTHROPODS			–
PST409	HELMINTHOLOGY			–
PSY100	INTRO PSYCH	3L:MWF9/12/2		S
PSY200F	STATS & RES METHODS	3L:MWF10/3	STA Group	S
PSY201S	STATS & RES METHODS	3L:MWF10/3	STA Group	S
PSY202F	SOC & PERS DEVELOPMT	3L:MWF12/3		S
PSY202S	SOC & PERS DEVELOPMT	3L:MWF12		S
PSY203F	INTRO SOCIAL PSYCH	3L:MWF9/11		S
PSY203S	INTRO SOCIAL PSYCH	3L:MWF9		S
PSY204F	PERSONALITY	3L:MWF10/1		S
PSY204S	PERSONALITY	3L:MWF10/1		S
PSY205F	DIFFERENTIAL PSYCH	3L:MWF3		S
PSY205S	DIFFERENTIAL PSYCH	3L:MWF2		S
PSY206F	INTRO LEARNING	3L:MW4,F1		S
PSY207S	INTRO LEARNING	3L:MW4,F1		S
PSY208S	SENSORY PROC PSYCHOPHYS	3L:MWF9		S
PSY209F	PHYSIOLOGICAL PSYCH	3L:MWF9		S
PSY210Y	INDIVIDUAL PROJECT	ARR		S

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
PSY211F	MOTIVATION	3L:MWF2		S
PSY212F	INDIVIDUAL PROJECT	ARR		PSY210
PSY213S	INDIVIDUAL PROJECT	ARR		PSY210
PSY214	INDIVIDUAL PROJECT	ARR		PSY210
PSY300F	COMP BEHAVIOUR DEVPT	3L:MWF11		–
PSY301F	COGN & SENS DEVELPT	3L:MWF11		S
PSY301S	COGN & SENS DEVELPT	3L:MWF10		S
PSY302S	SOC PSYCH ATTITUDES	3L:MWF12		–
PSY304F	INTERPERS BEHAVIOUR	3L:MWF12		S
PSY304S	INTERPERS BEHAVIOUR	3L:R4-6,F1		S
PSY305F	PSYCH OF LANG	3L:MWF9		–
PSY306S	SOC INTERACTION	3L:W4-6,F1		S
PSY307F	PERSNTY ASSESSMENT	3L:MWF3		S
PSY308F	INTRO VERBAL LEARNING	3L:MWF10		S
PSY309S	ORGANIZATION & MEMORY	3L:MWF10		S
PSY310F	SHORT TERM MEMORY	3L:MWF3		S
PSY311S	DISCRIMINATION LEARNING	3L:MWF3		S
PSY312	MOTIVATION	3L:MWF9		S
PSY313S	CONDITIONING & BEHAV	3L:MWF1		S
PSY314S	PERCEPTION	3L:MWF10		S
PSY316F	PHYSIOL OF LEARNING	3L:MWF1		S
PSY317S	PHYSIOL OF MOTIVATION	3L:MWF12		S
PSY319S	PSL OF SENSORY MTR BEHAV	3L:MWF3		S
PSY320	LEARNING LAB	ARR		S
PSY321	SENS & PERCEP LAB	ARR		S
PSY322	PHYSIOL PSYCH LAB	1L:T4,P:ARR		S
PSY324	ANIMAL BEHAV	3L:MWF9		S
PSY325F	BIOL FDTNS OF BEHAV	3L:MWF2		S
PSY326F	MAN AS A VERTEBRATE	3L:MWF12		S
PSY327F	PSYCH HIST & SYSTEMS	3L:MWF10		S
PSY328S	MATH MODELS	3L:MWF3		S
PSY329S	COMPUTER APPLICS	3L:MWF11		S
PSY330F	ABNORMAL PSYCH	3L:MWF10/3		S
PSY330S	ABNORMAL PSYCH	3L:MWF11/3		S
PSY332S	MOTIVATION	3L:MWF2		–
PSY333F	HUMAN MOTIVATION	3L:MWF12		S
PSY334	EXPTL PSYCH	1L:F1,2P:T9-11		S
PSY336S	THINKING & REASONING	3L:MWF9		S
PSY337S	COMMUNICATION & COGNITION	3L:MWF2		–
PSY400	THESIS	ARR		S
PSY402S	SOCIAL PSYCH TOPICS	2T:T9-11		–
PSY403F	DEVLPTL PSYCH TOPICS	2T:T9-11		–
PSY404S	ABNORM PSYCH TOPICS	2T:R9-11		PSY331S
PSY405F	PERSONALITY TOPICS	2T:R9-11		–
PSY406F	PERCEPTION TOPICS	2T:T11-1		PSY315
PSY407S	PHYSIOLOGICAL PSY TOPICS	2T:T11-1		PSY335
PSY409	LEARNING TOPICS	2T:R11-1		–
REL100	COMPAR RELIGIONS	2L:TR11,1T:N		S
REL110	REL & HUMAN CONDIT	1L:T/R3,1T:N,1P:N		S
REL120	CONTEMP REL THOUGHT	1L:F1,2T:M/T4-6		–

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
REL201	CHRISTIANITY & CHRISTENDOM	2L1T:MWF9		S
REL202	20 CENT CHRISTIANITY	2L1T:MWF9		–
REL204	HINDUISM I	2L1T:MWF10		S
REL210	CONTEMP PROBS REL ETHICS	1L:M10,1P:W/F10,1T:N		S
REL211	THE MEDIA & REL CONSC	2L:TR3,1P:N		S
REL220F	ANC REL SYMBOLS	2L:MW1,1T:N		S
REL221S	EVOL OF REL SYMBOLS	2L:MW1,1T:N		S
REL300	MODERN ATHEISM	2L:TR11,1T:N		S
REL301	REL EXP IN ARTS	2L:TR11,1T:N		–
REL302	MODERN REL ARCHITECTS	2L:TR2,1T:N		S
REL303	REL MOVEMTS TO 150 A.D.	2L:TR9,1T:N		REL303F
REL304	REL & IMAG LIT	2L:TR12,1T:N		S
REL306	TEILHARD DE CHARDIN	2L:MW1,1T:F1		S
REL308	CHRISTN & CIV SINCE 1054	2L:MF10,1T:W10		S
REL309	HINDUISM II	2L1T:MWF11		S
REL310F	CONTEMP ROM CATH	2L1T:MWF12		–
REL312	THE HOLOCAUST	2L:TR2,1T:N		–
REL313F	EARLY CHRIST LIT	2L1T:MWF2		REL303S
REL314F	JOHANNINE QUESTIONS	2L1T:MWF2		–
REL315	REL IN CANADA	2L:TR3,1T:N		–
REL316	REL & POLIT ACTION	2L1T:MWF3		–
REL317	REL & HUMAN BEHAV	2L:TR10,1T:N		–
REL318F	REL & EDUC	2L:MW1,1T:N		–
REL319S	THEOL OF INGMAR BERGMAN	2L:T4-6,1T:N		–
REL320Y	BIBLE SYMBOLISM	1L:T1,1T:R1		RK316
REL322S	PRETERNATURAL	2L1T:MWF12		–
REL400	READING & RESEARCH	ARR		–
REL401	COMPAR RELIGION	2T:N		–
REL402	PERSONAL & INTERPERS	2T:N		–
REL403	CONTEMP THINKERS	2T:N		–
REL404	REL ETHICS	2T:N		–
REL405	PHIL OF RELIGION	2T:N		–
REL410	ASPECTS OF ISLAM	2T:N		–
REL411	CHRIST THEOLOGIANS	2T:N		–
REL412	TILLICH	2T:N		–
SLA100	INTRO RUSS LANG	3T2P:MTWRF9/12/2	SLA121	S
SLA110	RUSSIAN LIT IN TRANS	2L:TR11,1T:N		S
SLA121	RUSS FOR MATRICULANTS	3T1P:MWF9,F1/MTWR1	SLA100/220	S
SLA201	INTENS RUSS RDG	3T:MWF3	SLA220/221	S
SLA206	ELEM POLISH LANG	3T:MWF11,1P:N		S
SLA208	ELEM UKRAINIAN LANG	3T:MWF11,1P:N		S
SLA210	19 CENT RUSS NOVEL IN TRANS	2L1T:TR3,F1	SLA240	S
SLA212	RUSS DRAMA IN TRANSL	2L:TR12		S
SLA215	CZECH SLOVAK LIT CULT TRANS	2L:TR10		S
SLA217	SERBO CROAT LIT CULT TRANS	2L:TR10		S
SLA220	RUSSIAN II	3T1P:TWRF9/2	SLA121/221	S
SLA221	MATRIC RUSSIAN II	3T1P:TWRF9	SLA220	S
SLA240	19 CENT RUSS NOVEL	2L:TR3,1T:N	SLA210	S
SLA305	ADV CZECH	4T:MTWR1		SLA471

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
SLA306	ADV POLISH	3T1P:MTWR1		SLA441
SLA307	ADV SERBO CROATIAN	4T:MTWR1		SLA451
SLA308	ADV UKRAINIAN	4T:MTWR1		SLA461
SLA310	20 CENT RUSS NOVEL TRANS	1L:M12,2T:WF12	SLA340	SLA325, 426
SLA311	SLAVIC CIV	2L:TR12		SLA433
SLA312	TOLSTOY DOSTOEVSKY IN TRANS	2L:TR3		–
SLA320	RUSSIAN III	3T1P:MWF10,T4	SLA321	S
SLA321	MATRIC RUSSIAN III	3T1P:MWF2,R4	SLA320	SLA322
SLA330	OLD CHUR SLAVONIC	2T:TR11		SLA335
SLA332	STRUC RUSSIAN LANG	2T:TR2		–
SLA340	20 CENT RUSS NOVEL	1L:M12,2T:WF12	SLA310	SLA325, 426
SLA405	CZECH SLOV LIT	2T:W9-11		–
SLA407	SERBO CROATIAN LIT	2T:W9-11		–
SLA408	UKRAINIAN LIT	2T:W9-11		–
SLA420	ADV RUSS COMP CONV	3T:MWF12	SLA321/421	S
SLA421	MATRIC RUSSIAN IV	3T:MWF12	SLA420	SLA422
SLA436	SLAV LINGUISTICS	2T:TR10		–
SLA440	RUSS POETRY SINCE 1815	3T:MWF2		SLA432
SLA442F	OLD RUSS LIT	1L:F1,2T:M9-11		SLA430
SLA443S	18 CENT RUSS LIT	1L:F1,2T:M9-11		SLA430
SLA444F	19 CENT RUSS FICTION	3T:MWF3		–
SLA445S	20 CENT RUSS FICTION	3T:MWF3		–
SLA446	USSR LIT & POL	2T:TR1		SLA426
SOC101	ANALYSIS HUM BEHAV	2L:MW1,½T:N		SOC100
SOC102	INTRO CAN SOCIETY	2L:MW1,½T:N	No two may	SOC101
SOC103	STRATIFICATION & IDEOLOGY	2L:MW1,½T:N	be combined	SOC101
SOC104	INDUSTRIAL SOCIETY	2L:MW1,½T:N	in any degree	SOC101
SOC105	SOC STRUC & CHANGE	2L:MW1,½T:N	programme.	SOC100
SOC106	URBAN SOCIETY	2L:MW1,½T:N		SOC101
SOC201	STATS & RES METHODS	2L:M4-6,1T:N	STA Group	S
SOC202	INTERPERS RELATIONS	2L:WF3,1T:N		S
SOC203	HIST OF SOC THEORY	2L1T:MWF2		S
SOC204	POLIT SOCIOLOGY	2L:TR10,1T:N		S
SOC205	URBAN SOCIOLOGY	3L:MWF12		S
SOC206	COMPAR SOC STRUC	2L:TR12,½T:N		S
SOC207	SOC OF OCCUPATIONS	2L:MW1,1T:N		–
SOC301	SOC STRATIFICATION	2L:WF12,1T:N		SOC300
SOC302	SOC OF FAMILY	3L:TR8:30-10 a.m.		S
SOC304	INDUSTRIAL SOCIOLOGY	2L:M4-6,1T:N		S
SOC305	SOC OF RELIGION	2L:R4-6,1T:F1		S
SOC306	CRIME & DELINQUENCY	2L:TR11,1T:N		–
SOC307	SOC OF ECON DEVLPT	2L1T:MWF2		S
SOC308	DEVIANT BEHAVIOUR	2L:TR11,1T:N		S
SOC309	COLLECTIVE BEHAV	2L:T4-6,1T:N		S
SOC310	RACE & ETHNIC REL	3L:MR4-5:30		S
SOC311	SOC OF EDUCATION	2L:TR12,1T:N		S
SOC312	POPULATION & SOCIETY	2L1T:MWF10		–
SOC314	FORMAL ORGANIZATIONS	3L:MR4-5:30		–

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
SOC315	URBAN SOC WORKSHOP	2L:W9-11,2P:F9-11		–
SOC316	POLIT SOC WORKSHOP	2L:W9-11,2P:F9-11		–
SOC317	SMALL GROUP PROCESSES	2L:W9-11,2P:F9-11		–
SOC318	ADV RES METHODS	3L:MWF3		SOC428
SOC401	SYSTEMATIC THEORY	2L:T4-6,1T:N		SOC420
SOC451F	SEMINAR	ARR		SOC457-70
SOC452S	SEMINAR	ARR		SOC457-70
SOC490	RESEARCH	ARR		S
SPA100	BEGINNING SPANISH	3L2P:MTWRF9/10/11/12/2	SPA120	S
SPA120	MOD LIT & LANG PRACT	3L1T:(MWF+T/R)9/11/2	SPA100	S
SPA125	INTRO SPAN LINGUISTICS	2L:TR11		SPA141
SPA150	SURVEY SPAN CULTURE	1L:F1,1T:N		SPA140
SPA190Y	MOD NOVEL IN TRANSL	1L½T:TR3		–
SPA195	READING COURSE	1L:F1		S
SPA220Y	COMP & ORAL PRAC I	1L1T:TR9/11/1/3/MW1	SPA221Y	S
SPA221Y	COMP & ORAL PRAC II	1L1T:TR11/MW1	SPA220Y	SPA220Y
SPA225Y	PHONETICS & PHONEMICS	1L½T:TR12		SPA391
SPA236S	MOD SPAN POETRY	2L1T:MWF9/11		SPA222S
SPA246F	MOD DRAMA 1830-1930	2L1T:MWF9/11		SPA223F
SPA256Y	SPAN NOVEL 1874-1936	1L½T:TR10/2		SPA221Y
SPA280Y	SPAN-AMER CIVILIZATION	1L1T:TR12/3		SPA224Y
SPA320Y	COMP & ORAL PRACTICE III	1L1T:TR9/11/2/MW1		SPA390
SPA325Y	MEDIAEVAL SPAN LANG	1L½T:TR1		SPA320
SPA333F	GOLDEN AGE VERSE	2L1T:MWF11		SPA321
SPA343Y	GOLDEN AGE DRAMA	1L½T:TR9		SPA321
SPA353Y	GOLDEN AGE PROSE	1L½T:TR11		SPA322
SPA366F	SPAN-AMER MODERNISTA VERSE	2L1T:MWF2		SPA421
SPA382S	MOD SPAN AMER NOVEL	2L1T:MWF12		SPA423
SPA386Y	SPAN AMER ESSAY	1L½T:TR2		–
SPA420Y	COMP & ORAL PRACTICE IV	1L1T:TR10/12/2		SPA490
SPA430S	MEDIAEVAL SPAN VERSE	2L1T:MWF10		SPA420
SPA436Y	20 CENT SPAN POETRY	1L½T:MW1		SPA422
SPA446S	CONTEMP SPAN DRAMA	2L1T:MWF9		SPA422
SPA450F	MEDIAEVAL SPAN PROSE	2L1T:MWF10		SPA420
SPA456Y	CONTEMP SPAN NOVEL	1L½T:TR10		SPA422
SPA466S	20 CENT SPAN AMER VERSE	2L1T:MWF2		SPA421
SPA470Y	MOD SPAN AMER DRAMA	1L½T:TR1		SPA423
SPA480F	SPAN AM LIT 1500-1880	2L1T:MWF12		SPA323
SPA484Y	MOD SPAN AMER CUENTO	1L½T:TR4		SPA423
STA232	INTRO TO STATISTICS	2L1T:MWF3	STA Group	S
STA242	APPLIED STATISTICS	2L1T:MWF3	STA Group	S
STA252	PROBABILITY & STATS	2L1T:MWF3	STA Group	S
STA332F	EXPERIMENTAL DESIGN	2L1T:MWF3		STA342
STA342S	REGRESSION ANALYSIS	2L1T:MWF3		STA342
STA357	PROBABILITY	2L1T:TRF1		S
STA432F	ESTIMATION & TESTING	2L1T:TR3,W4		–
STA442S	STRUCTURAL INFERENCE	2L1T:TR3,W4		STA432
STA447F	PROBABILITY THEORY	2L1T:TR2,F1		STA462

COURSE CODE	TITLE	TIMETABLE	NOT TO BE COMBINED WITH	1969-70 COURSE EQUIV-ALENT
STA457S	TIME SERIES ANALYSIS	2L1T:TR2,F1		STA457
STA482F	TOPICS IN STATISTICS	2L1T:ARR		–
STA487F	TOPICS IN PROBABILITY	ARR		–
STA492S	TOPICS IN STATISTICS	ARR		–
STA497S	TOPICS IN PROBABILITY	ARR		–
ZOO200	HUMAN BIOLOGY	2L½T:MWF12/2, 1½P:M/T9-12		S
ZOO210	ORGANISMS	2L½T:MWF3,3P:R9-12		ZOO320
ZOO211	GENL & HUM GENETICS	2L½T:MWF2,1½P:R9-12		ZOO322
ZOO212	PHYSIOL & DEVLPT	2L:TR3,3P:T9-12/W2-5		ZOO323
ZOO220	ANIMAL FORM & FUNC	2L:MW3,3P:T9-12		S
ZOO221	CELLULAR & DEVPTL ZOO	2L:TR12,3P:R9-12		S
ZOO222	ANIMAL BEH & NEUROBIOL	2L:TR4,3P:M/R9-12		S
ZOO223	ECOLOGY	2L:TR12,3P:M/W9-12		S
ZOO224	SYSTEMATICS & PHYLOGENY	2L:MW1,3P:F2-5		S
ZOO225	ANIMAL PHYSIOL	2L:TR1,3P:W/F9-12		S
ZOO226	PRINC GENETICS	2L:MW4,3P:T9-12		S
ZOO250	COMPARATIVE ANAT	1L½T:TR3,3P:W/F9-12		ZOO350
ZOO251	COMPARATIVE HISTOLOGY	2L:TR1,3P:M/F9-12		ZOO351
ZOO252	PARASITISM	2L:TR4,3P:W9-12		ZOO352
ZOO253	INVERT ZOOLOGY	1L:W2,3P:F9-12		ZOO423
ZOO254	HIST OF BIOL SCI	1L1T:TR4		ZOO400
ZOO420	MOLECULAR GENETICS	2L1T:MWF12		ZOO431
ZOO421F	HUMAN GENETICS	1L:M9,3P:M2-5		ZOO432
ZOO422S	MATH ASPECTS GENETICS	1L:M9,3P:M2-5		ZOO433
ZOO430	DEVPTL BIOLOGY	1L:T11,3P:R2-5		ZOO424
ZOO431	CELLULAR ASPECTS DVLPT	1L:F9,3P:M2-5		ZOO438
ZOO432	CELL BIOLOGY	1L:W10,3P:R2-5		ZOO437
ZOO433	RADIATION BIOLOGY	1L:W9,3P:W2-5		ZOO442
ZOO440	COMPAR ENDOCRINOLOGY	1L:M10,R2-5		S
ZOO441Y	NEUROPHYSIOLOGY	2L:TR10		ZOO439
ZOO442Y	NEUROPHYSIOL LAB	4P:F1-5		ZOO439
ZOO450	ANIMAL BEHAVIOUR	1L:F11,3P:W2-5		ZOO441
ZOO460	PROTOZOOLOGY	1L1T:TR11,3P:M2-5		ZOO443
ZOO461	ENTOMOLOGY	1L:W9,3P:W2-5		ZOO430
ZOO462	ADV INVERT ZOOLOGY	1L:M10,3P:R2-5		ZOO429
ZOO463	ADV VERT ZOOLOGY	4P:F9-1		ZOO427,9
ZOO464	VERT PALAEONTOLOGY	3P:F2-5		ZOO428
ZOO466	MAMMOLOGY	ARR		–
ZOO467	ORNITHOLOGY	ARR		–
ZOO470	LIMNOLOGY	1L1T:TR10		ZOO436
ZOO471Y	LIMNOLOGY LAB	ARR		ZOO436
ZOO472S	BEHAVIOUR ECOLOGY	1L:F10,3P:M2-5		–
ZOO473F	ANIMAL DISTRIB	1L:F10,3P:M2-5		ZOO422
ZOO474F	ECOL ENERGETICS	2L:TR9,2P:F1-3		–
ZOO475S	ENVIRONMENTAL FACTORS	2L:TR9,2P:F1-3		ZOO434
ZOO478F	STATISTICAL ECOLOGY	2L:TR12,2P:F3-5		ZOO435
ZOO479S	MODELS IN ECOLOGY	2L:TR12,2P:F3-5		ZOO435
ZOO480Y	ECOLOGY SEMINAR	2T:R3-5		–
ZOO497Y	PROJECT	ARR		–
ZOO498	PROJECT	ARR		S

CALENDAR 1970

January

S	M	T	W	R	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February

S	M	T	W	R	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

March

S	M	T	W	R	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April

S	M	T	W	R	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May

S	M	T	W	R	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June

S	M	T	W	R	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

July

S	M	T	W	R	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

August

S	M	T	W	R	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

September

S	M	T	W	R	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

October

S	M	T	W	R	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

November

S	M	T	W	R	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

December

S	M	T	W	R	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

CALENDAR 1971

January

S	M	T	W	R	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

February

S	M	T	W	R	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

March

S	M	T	W	R	F	S
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August

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September

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November

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UNIVERSITY OF TORONTO
SCARBOROUGH COLLEGE

faculty of arts and science
calendar 1970-71

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The Academic Calendar

1970

April 1	Last day for new and special students to apply for admission to the Summer Evening Extension Session.
April 1	Last day for receipt of applications for Early Admission to the September 1970-71 Full-Time Session. (Current Ontario Grade 13 students only are eligible for Early Admission.)
April 1	Course selection for academic year September 1970-71 begins for students currently enrolled in 1st or 2nd year.
April 10	Meeting of the Senate.
April 11	No classes after this date.
April 20	Annual examinations begin.
May 1	Last day for acceptance of registration forms for the Summer Evening Extension Session. After this date, a late fee of $10.00 is charged, until May 8.
May 8	Annual examinations end.
May 8	Meeting of the Senate.
May 8	Last day for acceptance of registration forms for the Summer Evening Extension Session with the $10.00 late fee. After this date, a late fee of $20.00 is charged, until May 15.
May 15	No registrations for the Summer Evening Extension Session are permitted after this date.
May 18	Victoria Day.
May 19	Summer Evening Extension Session classes begin.
May 29	University Commencement begins.
June 1	Last day for students in Summer Evening Extension Session to make a change of course.
June 1	Last day for receipt of applications from candidates seeking admission to the regular full-time session September 1970-71.
June 3	Scarborough College Commencement – 10:30 a.m.
June 30	Final date for withdrawal without academic penalty from Summer Evening Extension Session.

July 1	Dominion Day (all classes cancelled).
July 10	Last day for students with supplemental privileges to apply to write the August examinations.
August 1	Last day for receipt of applications from candidates seeking admission to the Winter Evening Extension Session.
August 3	Civic Holiday (all classes cancelled).
August 14	Last day of classes in Summer Evening Extension Session.
August 17-21	August Examinations.
September 7	Labour Day.
September 10	Last day for acceptance of registration forms for the Winter Evening Extension Session without the late fee. After this date a late fee of $10.00 is charged, until September 18.
September 10	Registration of 1st year students, Metro Toronto residents A-K inclusive: 9 a.m. to 4:30 p.m.
September 11	Registration of 1st year students, Metro Toronto residents L-Z inclusive: 9 a.m. to 4:30 p.m.
September 14	Registration of 1st year students living outside Metro Toronto: 9 a.m. to 4:30 p.m.
September 15	Registration of 2nd year students, A-K inclusive: 9 a.m. to 4:30 p.m.
September 16	Registration of 2nd year students, L-Z inclusive: 9 a.m. to 4:30 p.m.
September 17	Registration of 3rd year students, A-K inclusive: 9 a.m. to 4:30 p.m.
September 18	Registration of 3rd year students, L-Z inclusive: 9 a.m. to 4:30 p.m.
September 18	Last day for acceptance of registration forms for the Winter Evening Extension Session with the $10.00 late fee. After this date, a late fee of $20.00 is charged until September 30.
September 18	Registration of Full-Time Special Students at the Faculty Office, Sidney Smith Hall (A-L from 9 a.m.-12 noon; M-Z from 2 p.m. to 4:30 p.m.)
September 20	After this date, the late registration fee will be enforced for full-time students.

September 21	Classes for the 1970-71 Academic Year begin at 9 a.m.
September 28	Meeting of Faculty of Arts and Science Council.
September 30	No registrations for the Winter Evening Extension Session are permitted after this date.
October 8	Meeting of the Senate.
October 12	Thanksgiving Day (all classes cancelled).
October 15	Last day for enrolling in Fall Term Half-Courses or Full Year Courses
October 15	Last day for receipt of applications for University of Toronto In-Course Bursaries.
October 31	Last day for receipt of applications for Ontario Student Awards (OSAP).
November 2	Meeting of Faculty of Arts & Science Council.
November 11	Remembrance Day (classes as usual).
November 13	Meeting of the Senate.
November 20	Fall Convocation.
November 20	Last day for withdrawal without academic penalty from Fall Term Half-Courses.
November 20	All students must confirm their programmes, in person, with the Registrar's Office between November 1 and November 20, after which a late fee of $1.00 per day (maximum $20.00) will be charged.
November 30	Meeting of the Faculty of Arts & Science Council.
December 11	Meeting of the Senate.
December 18	Last day of classes. Term ends at 5 p.m.

1971

January 4	Second term begins. Classes commence at 9 a.m.
January 4	Meeting of the Faculty of Arts & Science Council.
January 8	Meeting of the Senate.
January 15	Last day for receipt of applications for Scarborough College bursaries.
January 20	The second term instalment of fees must be received by this date.

February 1	Last day for enrolling in Spring Term Half-Courses.
February 1	Meeting of Faculty of Arts & Science Council.
February 12	Meeting of the Senate.
February 15	Last day for withdrawal without academic penalty from extra Spring Term Half-Courses and from extra Full Year courses.
February 15	Last day for withdrawal without academic penalty from a Full-Time or a Part-Time programme.
February 14-20	Reading Week (all classes cancelled).
March 1	Meeting of the Faculty of Arts & Science Council.
March 12	Meeting of the Senate.
March 29	Meeting of the Faculty of Arts & Science Council.
April 1	Last day for receipt of applications for Early Admission to the September 1971-72 Full-Time Session. (Current Ontario Grade 13 students only are eligible for Early Admission.)
April 1	Last day for new and Special Students to apply for admission to the Summer Evening Extension Session.
April 7	Meeting of the Senate.
April 9	Good Friday (all classes cancelled).
April 10	No classes after this date. All term assignments must be submitted by this date.
April 19	Annual examinations begin.
May	Meeting of the Faculty of Arts & Science Council at the call of the Chairman.
May 1	Last day for acceptance of registration forms for the Summer Evening Extension Session. After this date, a late fee of $10.00 is charged, until May 8.
May 7	Annual examinations end.
May 8	Last day for acceptance of registration forms for the Summer Evening Extension Session with the $10.00 late fee. After this date, a late fee of $20.00 is charged, until May 15.
May 14	Meeting of the Senate.
May 15	No registrations for the Summer Evening Extension Session are permitted after this date.

May 17	Summer Evening Extension classes begin.
May 24	Victoria Day (all classes cancelled).
May 28	University Commencement begins.
June 1	Last day for students in Summer Evening Extension Session to make a change of course.
June 1	Last day for receipt of applications from candidates seeking admission to the regular Full-Time Session September 1971-72.
June 30	Final date for withdrawal without academic penalty from the Summer Evening Extension Session.
July 1	Dominion Day (all classes cancelled).
July 10	Last day for students with supplemental privileges to apply to write the August examinations.
August 1	Last day for receipt of applications from candidates seeking admission to the Winter Evening Extension Session.
August 2	Civic Holiday (all classes cancelled).
August 13	Last day of classes in the Summer Evening Extension Session.
August 16-20	August examinations.

THE FACULTY OF ARTS AND SCIENCE AT SCARBOROUGH COLLEGE

Scarborough College is one of the eight colleges of the University, and all its students are members of the Faculty of Arts and Science, the largest of the twenty-seven schools and faculties in the University. Through the facilities of these eight colleges an enormous and diverse range of academic courses are available to students.

Scarborough College, physically at a distance from the St. George campus, never intended merely to duplicate what is offered on that campus. Instead the College, with the full approval of the Faculty, has set out to create a distinctive and interesting academic programme. Because the College is self-contained on its own campus, because the design of the building tends towards a greater intimacy than is usual elsewhere in the University, and because of the sense of academic community that derives from this, the College has continually worked to find ways in which it can benefit from this closeness between faculty and students, and between the various disciplines taught in the faculty. The result has been a broad movement towards the development of interdisciplinary studies, the like of which has not been attempted elsewhere in the University.

Not only does the College embrace the better features of the New Programme of the Faculty: the disappearance of the distinctions between Arts and Science students, between General and Honours students; it, alone among the colleges, has abandoned the year system, whereby students were obliged to complete three or four distinct years in proceeding towards their degree. As well as being permitted complete freedom of selection of subjects in their programmes, students may also enrol in courses of varying degrees of seniority and complexity, and are thus able to put together any one of a large number of interdisciplinary programmes.

Under the old programme of the Faculty of Arts and Science, a student was given little freedom but was streamed, in his second year, into an area of concentration. With the tendency away from the old traditional programmes of specialization, and with the vastly greater freedom offered by the New Programme, the student is given an added burden of responsibility. For now, it is he who must decide what and to what degree his area of specialization will be. The College urges, and helps, its members to exercise this responsibility with discretion, and to avail themselves of as much counselling as they need in order to obtain a satisfying and useful degree.

Application and Admission

Full details of the University of Toronto undergraduate admission requirements and application procedures are contained in the *Undergraduate Admission Handbook 1970-71* (for students presenting Canadian qualifications) and the *Undergraduate Admission Bulletin 1970-71* (for students presenting qualifications other than Canadian). Copies of the former publication are available in all Ontario secondary schools, and both booklets may be obtained on request from the Director of Admissions, University of Toronto, to whom all enquiries concerning admission should be directed.

Application Procedures:
(a) **Full-Time Studies:** As the University of Toronto operates on an academic year system, admissible candidates proceeding as full-time students may begin a degree programme only in September. *Candidates currently enrolled in Ontario Grade 13* should obtain application forms from their High School Guidance Office. *All other candidates* should first write to the Office of Admissions, specifying their interest in Scarborough College and giving full details regarding their academic standing.

(b) **Part-Time Studies:** Through the Division of University Extension at Scarborough College, students are enabled to study for degrees on a part-time basis. Courses are offered in a Winter Evening Session and a Summer Evening Session each academic year. A degree course may be begun at either session. All candidates intending to take their degree course through the Division of University Extension at Scarborough College should make application to the Office of Admissions, University of Toronto.
(Complete information relating to the Extension programme is given in the appropriate section of this Calendar.)

General Admission Requirements: Candidates for admission in the fall of 1970 to the first year of an undergraduate programme will be required to offer standing in at least four Ontario Grade 13 subjects comprising at least seven credits, or a programme of equivalent standing from another educational system. (The Office of Admissions will answer all enquiries relating to equivalent certificates.) Applicants should note that the possession of the minimum published requirements does not ensure admission as the number of places available in Scarborough College is limited.
The four subject, seven credit Grade 13 programme mentioned should include two subjects from English, another language, Mathematics (either A or B); and optional subjects for a total of at least seven credits.
Under the University of Toronto's admission practices, the school record of the applicant, the confidential report of the school and all available standard tests are considered. The length of time in secondary school, and the number of sittings at Grade 13 examinations (or their equivalents) needed to obtain the entrance requirements are also taken into account. Applicants who indicate Scarborough College as the college of their first choice are given preferential consideration.

Mature Students: Students, who are 25 years of age on October 1, 1970, who have been residents of Ontario for at least one year, who have a sound academic record, and who have at least 66% in at least one Grade 13 subject, or its academic equivalent, and obtain standing in such other tests as may be required, will be considered for admission to Scarborough College as Mature Students. Possession of the minimum requirements does not ensure selection.

English Facility Requirements: Candidates whose mother tongue is not English may be required to meet an appropriate standard in a recognized test of English facility such as the *University of Michigan English*

Language Test, the *Certificate of Proficiency in English* issued by the Universities of Cambridge or Michigan, or the *Test of English as a Foreign Language*. Details and information about these tests may be obtained from the Office of Admissions.

Summary of Application Dates: Applications for admission should be submitted as early as possible in the year for which the applicant seeks admission, and not later than the dates below.

1 April, 1970	Last day for receipt of applications to be considered for Early Admission. (Early Admission is offered only to currently enrolled Ontario Grade 13 students wishing to enter full-time studies.)
1 April, 1970	Last day for receipt of applications for Summer Evening Extension Session (not open to students currently enrolled in full-time Ontario Grade 13 courses).
1 June, 1970	Last day for receipt of applications to be considered for regular full-time courses.
1 August, 1970	Last day for receipt of applications for Winter Evening Extension Session.

Academic Regulations

Regulations are subject to change; students are encouraged to consult with the Registrar's Office at any stage of their university careers.

Programmes of Study

Each student designs his own academic programme by selecting in each year *five* courses that suit his interests. Any course may be selected, provided that all prerequisite and corequisite requirements are fulfilled.
Two half-courses are equivalent to one year course.
One or two extra half courses or one extra year course may be selected each year. The standing obtained in the extra course will be recorded on the student's transcript; but, the course will not be credited towards the degree requirements.

First Year Programme

To complete a first year programme, a student must obtain standing in *five* courses.
Where a first year student fails an *A-level* course, but earns a term mark of at least 60% in that course, the student will be permitted to write a supplemental examination. Failure in a supplemental examination will not count as a second failure, but will necessitate re-enrolment in the failed course or in a substitute.

Second Year Programme

To complete a second year programme, a student must obtain standing in *ten* courses, including at least *three* B-level or C-level courses. (A stu-

dent may select any number of A-level courses in second year, provided that at least three B-level or C-level courses are completed by the end of second year.)

Third Year Programme

To complete a third year programme, a student must obtain standing in *fifteen* courses, including at least *eight* B-level or C-level courses. A student who completed first year as a full-time student in the General Arts or General Science Programme will be given standing equivalent to *five* A-level courses in the New Programme. (A student may select any number of A-level courses in third year, provided that at least eight B-level or C-level courses are completed by the end of third year.)

The student must earn final marks of 60% or better in at least *eight* of the fifteen courses, which must include at least *four* of the B-level or C-level courses.

The Three Year Degree

A student may choose to receive his Bachelor of Arts or Bachelor of Science degree upon completion of the third year programme. (Alternatively a student may choose to proceed to a fourth year programme.)

A student who chooses to receive his degree upon completion of the third year programme must notify the College Registrar to that effect by *no later than 15 February 1971.* (A special form will be provided for this purpose.)

To qualify for a *Bachelor of Science* degree, a student must obtain standing in at least *six B-level or C-level courses* offered in the following disciplines:

Astronomy	Mathematics
Biological Science	Physics
Chemistry	Psychology
Geography (GGRB03Y and GGRB07Y only)	

A student who chooses to receive his degree upon completion of the third year programme will have the designation "Bachelor of Arts (Three Year)" or "Bachelor of Science (Three Year)" on his transcript.

Fourth Year Programme

A student who has completed the requirements for the three year degree may enter the fourth year programme.

To complete a fourth year programme, a student must complete an additional *five* courses, including no more than one A-level course.

The student must earn final marks of 60% or better in at least *four* of the five additional courses.

The Four Year Degree

A student who has completed a fourth year programme will receive a Bachelor of Arts or Bachelor of Science degree. The designation "Bachelor of Arts (Four Year)" or "Bachelor of Science (Four Year)" will appear on his transcript.

To qualify for a Bachelor of Science degree upon completion of a fourth

year programme, a student must obtain standing in at least *nine* B-level or C-level courses offered in the following disciplines:

Astronomy
Biological Science
Chemistry
Geography (GGRB03Y and B07Y only)
Mathematics
Physics
Psychology

Refusal of Further Registration

A student will be refused further registration in the Faculty of Arts and Science if:

1) he fails four courses of the first ten courses attempted; or
2) he fails five courses of the first fifteen courses attempted; or
3) he fails six courses; or if
4) he fails to satisfy the requirements for a three year degree in the first twenty courses attempted.

A student is liable to be refused registration in the Faculty of Arts and Science *for one year* if he fails *two or more* courses at the first attempt any year. [Refusal of registration for one year is necessitated by enrolment limitations. Where a student fails two or more courses in any year, the Faculty of Arts and Science will examine the student's academic record in the year and in previous years in order to determine whether or not the student will be refused registration for the next year.)

A student admitted as a mature student on probation will be refused registration in the Faculty until he meets full Grade XIII admission requirements if he fails more than two courses of the first five courses attempted.

Failed supplemental examinations in first year do *not* count as second failures.

General Regulations For Standing

A full-time student will normally be expected to take a full programme of studies (five courses) in the winter session of each year.

Under exceptional circumstances a student may petition the Faculty of Arts and Science for permission to withdraw without academic penalty from not more than one year course (or two half-courses).

A student may withdraw without academic penalty from an *extra* fall term half-course at any time before 20 November, and may withdraw without academic penalty from an *extra* year course or spring term half-course before 15 February.

A part-time student will enrol in the Division of University Extension. An Extension student may take a maximum of three courses in the winter session and a maximum of two courses during the summer session.

A student may withdraw without academic penalty from his programme at any time until 15 February.

Credit will be retained for any half-course completed and discredit noted for any half-course failed before the date of withdrawal.

Standing In A Course

The following scale of marks and grades will be used for all courses and half-courses:

80%-100%	Grade A	50%-59%	D
70%-79%	B	Below 50%	Fail
60%-69%	C		

The method of determining standing in each course will be decided by the Division offering the course. Where a final examination is required, it will be held in a special examination period.

In all A-level courses, final examinations are required. In an A-level course the term mark for the course will count as not less than one-third and not more than two-thirds of the final mark.

In the case of half-courses, standing must be obtained in each half-course attempted. Marks in two half-courses may *not* be averaged to produce standing in an equivalent whole course.

Aegrotat Consideration

If the ability of a student to complete a course is affected by illness or domestic problems, the student may enter a petition through the College Registrar for consideration by the Faculty of Arts and Science. If the Faculty decides that there are adequate grounds for the petition, the Division which offers the course will determine the status of the work done by the students and the step, if any, that he must take in order to complete the course.

Petitions for aegrotat consideration for a fall term course must be entered as soon as possible after the normal date of completion for the course. Petitions for aegrotat consideration for a spring term course or a year course must be entered by the last day of the Annual Examinations. Petitions for aegrotat consideration for a summer session course must be entered by the last day of the August Examinations.

Petitions must be accompanied by a medical certificate which includes a statement that the student was examined at the time of illness, or must be accompanied by other appropriate evidence to support the petition.

Transcript

A copy of a student's transcript of academic record will be issued to the student at his request, subject only to reasonable notice and a nominal copying fee. Transcripts may be ordered from the Office of the Faculty of Arts and Science (First Floor, Sidney Smith Hall, St. George campus, University of Toronto) on forms available from the office of the College Registrar.

Registration

For the session 1970-71, students are free to select their courses at any time from the beginning of April onwards. Thus, returning students will be able to procure counselling and information concerning courses be-

fore the summer exodus, and first year students, as soon as they are admitted, will be able to plan their programmes during the more leisurely months of July and August. Since enrolment in many courses is severely limited, all students are urged to stake their claims as early as possible. Course changes may be effected at any time after the initial selection of courses (except during Registration Week). Students are urged to avoid leaving course selection until the official registration period, the dates of which are given below. During this time students must produce receipted fees forms, receive their admit-to-lecture cards, and check their course selections. Course changes can be made from the end of registration until 15 October.

Full details of the registration procedures are available from the Registrar's Office. Details of registration will be supplied to all new students upon admission. The College urges you, in your own interest, to select your courses as early as you are able.

Thursday	10 September	9:00-4:30	First Year A-K (Metro Toronto)
Friday	11 September	9:00-4:30	First Year L-Z (Metro Toronto)
Monday	14 September	9:00-4:30	First Year A-Z (Outside Metro Toronto)
Tuesday	15 September	9:00-4:30	Second Year A-K
Wednesday	16 September	9:00-4:30	Second Year L-Z
Thursday	17 September	9:00-4:30	Third Year A-K
Friday	18 September	9:00-4:30	Third Year L-Z

Fourth year students may register at any time during the Registration period.

Fees

Sessional Fees

Fees for the 1970-71 session are listed below. Please note that fees are subject to change by the Board of Governors of the University.

	Full Fee	*First Instalment*	*Second Instalment*
			(Due 20 January 1970)
Men	$520.	$285.	$238.
Women	514.	279.	238.

Sessional fees include both the basic academic fee of $470. and incidental fees for: the Scarborough College Student Society, the University of Toronto Students' Administrative Council, Athletics, Health Service, and (for men only) Hart House.

Either full fees or the first instalment of fees must be paid before a student is permitted to register. The second instalment must be paid by 20 January 1971. A late fee is charged to students who are late in paying the second instalment.
All University fees must be fully paid before a student may receive his examination results or be credited with standing in his year.

Payment of Fees

1) Full Fees or First Instalment:
Each student will receive a "fees form" through the mail sometime in August.
The fees forms plus a cheque for the full amount of fees or for the first instalment should be mailed or taken *as soon as possible to*

The Fees Department
Office of the Comptroller
215 Huron Street
Second Floor
University of Toronto
Toronto 181

The Fees Department will return to the student one receipted copy of the fees form. This receipted copy will be required to complete the registration process.
If the student is unable to pay his full fees or his first instalment *during the month of August*, he should *not* mail his fees to the Fees Department because he will not receive back the receipted copy of his fees form in time for Registration. Rather the student should take his fees in person to the Fees Department or to the Registrar's Office at Scarborough College. Fees will be accepted at the College only during the month of September.
Fees must be paid by means of personal cheque or money order, payable to the University of Toronto. (Counter cheques cannot be accepted.) Cash will be accepted from students paying in person at the Fees Department. However, there are no facilities at the College for handling cash.

2) Deductions From Full Fees or First Instalment:
Students may deduct the following in making payment for full fees or for first instalments:

Deposits: A student who has been newly admitted to the University, and who has paid the twenty-five dollar deposit upon acceptance of his offer of admission, may deduct twenty-five dollars from his full fees or from the first instalment. The student must quote on his fees form the number of the receipt which will have been mailed to him.

Ontario Student Awards: A student may apply the loan portion only of his Ontario Student Award to pay some or all of his full fees or first instalment. A student who wishes to use his OSAP loan portion to pay his fees must enclose his "Student Award Statement" with his fees form and cheque (if any).

Scholarships: A student may apply to his fees any scholarship awarded by the University of Toronto or by Scarborough College, or awarded through the auspices of the Office of Student Awards of the University. A student (except an Ontario Scholar) who receives a scholarship or another award directly from agencies other than the University may *not* deduct the amount of the Scholarship from his fees.
A student who pays full fees in the fall may deduct the full amount of his scholarship. A student who pays only the first instalment in the fall may deduct up to one-half the amount of his scholarship.

Ontario Scholarships: An Ontario Scholar may apply his scholarship to the payment of fees provided that his statement of award is sent in with the fees form. A student who pays full fees in the fall may deduct the full amount of his Ontario Scholarship. A student who pays only the first instalment may deduct half the amount of his scholarship.

3) Second Instalment:
The second instalment of fees must be paid on or before 20 January 1971.
Fees should be sent or taken in person to The Fees Department.
A student who pays fees by mail must send a personal cheque or money order *(not cash),* and should print neatly on the back of the cheque his: name, address, student number, College and year.

4) Use of OSAP Grant Portions to Pay the Second Instalment:
Ontario Student Award grant cheques cannot be released until the student has paid the second instalment of his fees. Consequently a student who wishes to receive his grant cheque (normally available at the end of January) is encouraged to ensure that his fees are paid *early* in January. Only if fees are paid early in January will the College receive clearance to release the student's grant cheque when it arrives later in January. If a student is unable to pay his fees early in January, and will be receiving an OSAP grant later in January, the student is advised to pay his fees (by means of a personal cheque or money order only) at the Registrar's Office.
A student who depends on the grant portion of his Ontario Student Award in order to pay his second instalment must bring to the College Registrar's office his *personal* cheque for fees when he comes to pick up his grant. His fees cheque will be held *for three days* to allow him time to deposit the grant cheque and to cover his cheque for fees.

Miscellaneous Fees

In addition to the sessional fees, there are a number of special fees and penalty fees.

1) Special Fees
Application for Admission Fee: A ten dollar fee is required of all applicants who are not currently full time students in a Canadian High School, or who have not registered in a previous session at the University of Toronto.

Special and Supplemental Examination Fees: Students who are permitted to write supplemental examinations must pay a fee of ten dollars for a supplemental examination in one course and five dollars for supplemental examinations in each additional course. Students who write supplemental examinations at special examination centres outside Toronto must pay an additional fee of five dollars per course. Students who are granted permission to write special examinations must pay a fee of ten dollars per course. Students who petition successfully for the re-check of marks in a failed final examination must pay a fee of five dollars which is refunded if an error is found.

2) Penalty Fees:
Late fees are required of students who fail to complete on time certain University procedures.
Late Registration Fee: A student who registers after the final day of the registration period must pay a late fee of ten dollars plus one dollar for each day of delay, to a maximum of twenty dollars.
Fee for Late Confirmation of Programme: Each student is required to confirm the College's record of his programme and to apply for final examinations in his courses by 20 November of each year. A student who completes these procedures late is subject to a late fee of one dollar per day, to a maximum of twenty dollars.

Fee for Late Payment of the Second Instalment of Sessional Fees: Each student is required to pay the second instalment of his fees by 20 January of each year. A student who is late with his second instalment must pay a late fee of three dollars per month, to a maximum of ten dollars.

Counselling

The College is continually seeking more effective means of academic and non-academic counselling. Academic counselling is supplied voluntarily by many members of the Faculty who arrange with the Registrar hours at which they can be reached. Since, during the summer, many Faculty leave the College for research purposes, students are urged to procure counselling in April and May or after 15 September. We do, however, attempt to ensure that newly admitted students are provided with academic counselling during July and August.
The Registrar's Office, besides providing a certain amount of academic counselling, also provides general counselling. The College also has a Student Services Office which provides information about medical, psychiatric and legal help, housing, employment, and advice about any of the problems that may confront a student. Students are invited to make full use of this Office either by dropping in to see Mrs. Joan Adams (S303G) or by calling her at 284-3292.

Timetable and Course Descriptions

Winter Day Session 1970-71

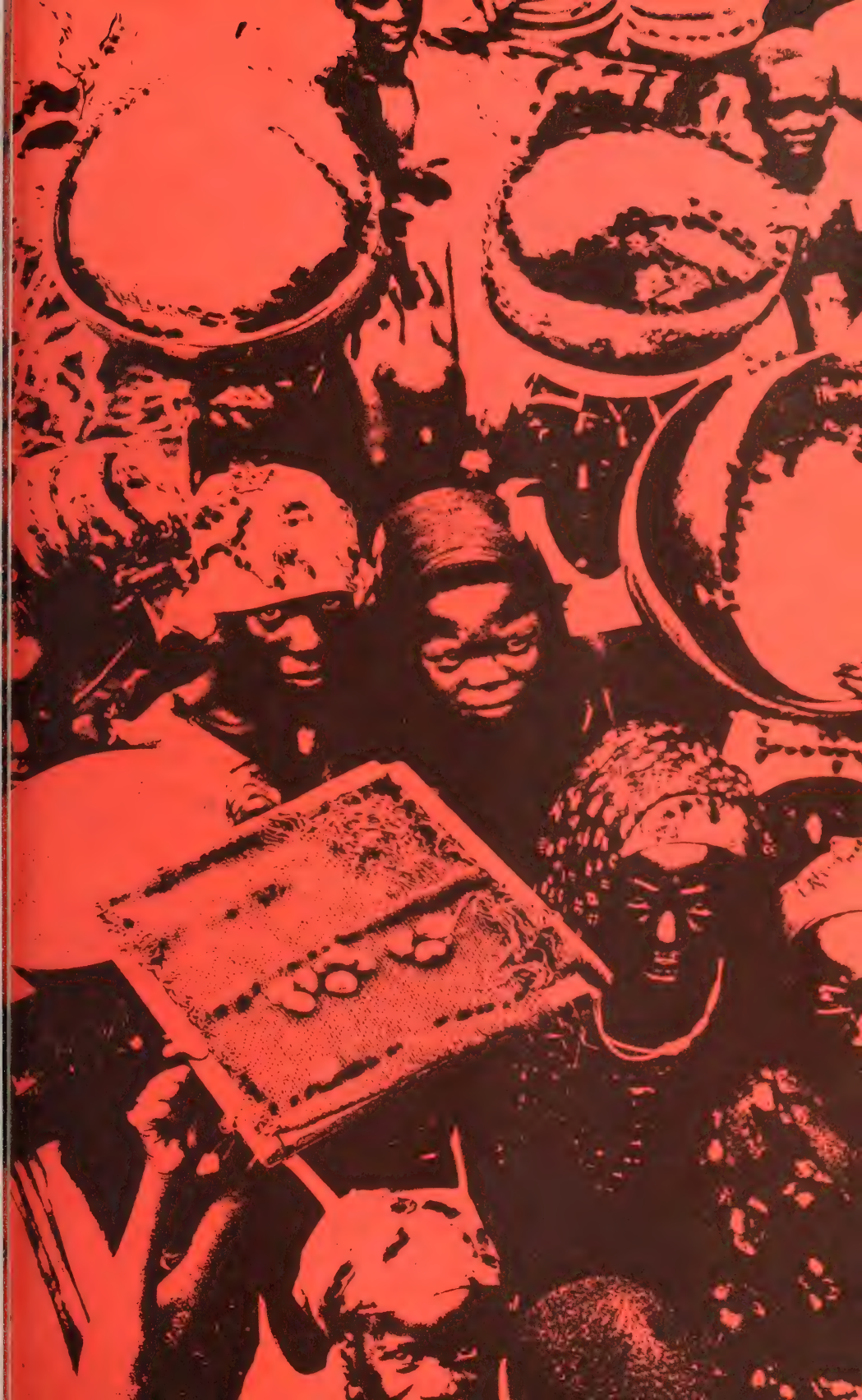
Notes

1) The letters A, B and C prefixed to course numbers indicate levels of complexity and degrees of specialisation.
2) The letters Y, F, S and H indicate respectively Full Year, Fall Term, Spring Term and Year-long Half Courses.
3) Where a student lacks pre- or corequisites for a course, he can only be admitted to that course by the written permission of the instructor. Such permission must be submitted to the Registrar.
4) Where two numbers appear beside a course, one ending in F, one in S, the course is given twice, once in each term.
5) Monday, Tuesday, Wednesday, Thursday and Friday are indicated by the letters M, T, W, R and F.

Anthropology

ANTA01Y	2L:M12W1 1T:M9/M10/M11/ W9/W10/W11/ R9/R11/R12/ F9/F10/F11
ANTA02F	2L:T2R12 1T:T3/T4/W9/W10
ANTA03S	2L:T2R12 1T:T4/R10/F9/F11
ANTB01F	2L:M11W9 1T:T9/T10/F10/F3
ANTB02S	2L:M1W1 1T:T9/T10/T11/T12/ T4/W12/F12
ANTB05F	2L:T1W1 1T:W3
ANTB06S	2L:R2F2 1T:R3/F1
ANTB07S	2L:M11W9 1T:F10/F3
ANTB09F	2L:T12R12 1T:T5/R5
ANTB10F	2L:R2R3
ANTB13Y	2P:M3M4
ANTB14F	2L:M1W2 1T:W12/F12
ANTB15Y	2L:M12W12 1T:W5
ANTB16S	2L:M4W4 1T:F2/F3
ANTB17F	2L:M4W4 1T:F2/F3

Anthropology literally means "the study of man", that is, of man in his distinctively human (as opposed to animal) aspects. The subject has four major sub-disciplines. The present curriculum concentrates on two of these: cultural and social Anthropology; and prehistoric archaeology. The other two (Physical Anthropology and Linguistics) are presented as part of an introductory course, but will be given more attention as staffing permits.
A fundamental premise of Anthropology is the unity of mankind based on recognition of the fact that all varieties of mankind are very



similar in physical make-up and basic mental operations, whether they belong to literate or pre-literate cultures. At the same time the diversity of cultures and social forms is among the main concerns of anthropologists. Such general laws as Anthropology has evolved are based on the comparison of specific cultures and societies studied in the field.

ANTA01Y **Introduction to Anthropology**
An introduction to the fields of Anthropology through which the student will obtain the anthropological view of the nature and diversity of man. The first term takes up Physical and Prehistoric Anthropology concentrating on the biological basis and the evidence for human physical evolution, and the archaeological evidence for the origin and growth of culture. The second term will deal with the comparative study of the family, economics, politics and religion in non-industrial societies.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Schroeder, Knight

ANTA02F **Political and Economic Anthropology**
A general survey of the problems of production, exchange and distribution in Anthropology, and the role of political systems in a largely "developmental" framework.

ANTA03S **Social Organization**
"Kinship is to Anthropology what logic is to Philosophy or the nude is to art; it is the basic discipline of the subject." (Fox). The purpose of the course is to teach something about the species *Homo sapiens* by analysing variations in social structure.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Hopen

ANTB01F **Cultural Ecology**
A discussion of the reticulate inter-relationships of human populations differing in culture, social organization and technology and their environment. Material will deal with variables in four broad sub-areas, systems of food production, patterns of disease, ecological aspects of warfare and anthropological demography. Cases will be drawn largely, but not exclusively, from non-industrialized societies.
Fall Course/Prerequisites: None/*Corequisites:* None
Instructor: Knight

ANTB02S **Anthropology of Religion**
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Hopen

ANTB03F **The Americas: An Anthropological Perspective**
[*Not offered in 1970-71*]
Fall Course/Prerequisites: None/*Corequisites:* None

Timetable : 3L:M1T1R1

ENGLISH

ENGB22Y is deleted.

ENGB24Y : MAJOR AMERICAN AUTHORS - Timetable, Pre-and Co-requisites, instructor same as ENGB22Y.

FRENCH

FREC10Y : LANGUAGE PRACTICE (p.64) should read FREC01Y.

GEOGRAPHY

GGRA01Y - Timetable changed as follows:
2L:R11R4
2T:R1R2/F9F10/F11F12

GGRA03S : INTRODUCTORY CARTOGRAPHY is added.
Timetable : 2L:W10R10 IT:M9/R3

GGRC09F : PROBLEMS OF THE NORTH is added
Timetable: 3T:W1W2R10

ANTHROPOLOGY

ANTB09F is changed to ANTB09S
ANTB10F " " " ANTB10S - new timetable : 2L:M4W4
ANTB16S " " " ANTB16F and has a new timetable:
2L:R2R3
IT:M11/W3

ECONOMICS

ECOA02S is added. It has the same title and description as ECOB05Y, which is withdrawn. The timetable for ECOA02S is as follows:

2L:W10R10
IT:M9/M10

ECOB05Y is deleted.
ECOB08F is deleted.
ECOB12F : SOVIET ECONOMIC HISTORY is added.

SCARBOROUGH COLLEGE CALENDAR 1970-71

Errata 24 June, 1970

ACADEMIC CALENDAR

1971

P.8	January 4	Second term begins.
	January 6, 7 and 8	Examinations in Fall-Term Half-Courses.
	January 11	Classes commence at 9:00 a.m.

A thematic treatment of German history from the mid-nineteenth century to the present, concentrating on ideas and movements in politics, society, thought and culture..

MATHEMATICS

MATB45S is deleted.
MATB55S is not open to students who have taken MATB08S.
MATC50F is open to students who have taken MATB08S.
MATC60F is deleted.
MATC65S is deleted.

Fall Course/Prerequisites: None/*Corequisites:* None
Instructor: Shirley

NTB04S Culture of North America
A survey of indigenous cultures as they developed in North America north of Mexico before, during and after European expansion. The material will be largely drawn from a select sample of Indian societies as described in the ethnographic present (3 to 300 years ago), although there will be some discussion of contemporary processes among these groups. [*Course not offered in 1970-71*]
Spring Course/Prerequisites: None/*Corequisites:* None

NTB05F Social Anthropological Study of Africa
After a review of certain cardinal social and cultural background features of the continent, a more intensive study of comparative religion will be made. Hopefully, guest lecturers will help round out the perspective.
Fall Course/Prerequisites: None/*Corequisites:* None
Instructor: Hopen

NTB06S Cultures of Oceania
In Oceania many small societies with highly diverse cultures have developed in comparative isolation. The course will survey their kinship structures, economics, political systems, religions and art, drawing from an extensive literature much of which, because of its theoretical importance, is basic for the study of general Anthropology.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Schwimmer

NTB07S Comparative Slavery
An examination of "slavery" as an institution in several areas of the world, including Brazil, Africa, the Caribbean, and the United States. An effort will be made to examine the modern consequences of slavery as well.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Shirley

NTB08S Anthropology of Development
An analysis of problems of development and underdevelopment in the world, including the problems connected with "secondary development" in industry and politics. The main focus will be on Latin America though not to the exclusion of other areas, such as Canada. [*Course not offered in 1970-71*]
Spring Course/Prerequisites: None/*Corequisites:* None

NTB09F Theory and Analysis in Social and Cultural Anthropology
A seminar discussion course on basic problems and methods in Anthropology. A short survey of past and present anthropological theory will be presented and current schools of thought debated.

Fall Course/Prerequisites: None/*Corequisites:* None
Instructor: Schwimmer

ANTB10F **Action Anthropology**
For some years anthropologists have used their knowledge of human societies in attempts to solve "practical" problems. The course will offer an opportunity to do some fieldwork, define some problems existing in the groups investigated and consider possible solutions to these problems.
Fall Course/Prerequisites: None/*Corequisites:* None
Instructor: Schwimmer

ANTB11F **Man in the Pleistocene**
The evolution of man in the Pleistocene. A review of the evidence and chronological framework for man's physical and cultural development during his first two million years. [*Course not offered in 1970-71*]
Fall Course/Prerequisites: None/*Corequisites:* None

ANTB12S **Man in the Holocene**
The evolution of culture in the post-Pleistocene period. A study of the enormous cultural changes that led to the Neolithic and Urban Revolutions and the beginnings of civilization. Archaeological evidence for these transformations will be reviewed in both the New and Old Worlds. [*Course not offered in 1970-71*]
Spring Course/Prerequisites: None/*Corequisites:* None

ANTB13Y **Methods and Principles of Archaeology**
Consideration of the techniques by which an archaeologist collects and analyses prehistoric data for the reconstruction and study of culture history.
Year Course/Prerequisite: None/*Corequisite:* None
Instructor: Schroeder

ANTB14F **Human Evolution**
Fall Course/Prerequisites: None/*Corequisites:* None

ANTB15Y **Introduction to Physical Anthropology**
Year Course/Prerequisites: None/*Corequisites:* None

ANTB16S **Ethnic Cultures of Canada**
A consideration of contemporary subcultures in Canada and how these have developed in the last forty years. Indigenous groups (Indian-Metis-Eskimo) and formerly immigrant groups, both rural and urban, will be treated in the same general framework. The course will attempt to place local and regional ethnic groups and subcultures in a national political and economic context.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Knight

ANTB17F **Complex Societies**

An examination of the different forms of social structure and cultural variation in modern complex societies, as well as analysis of how they change.

Fall Course/Prerequisites: None/*Corequisites:* None

Astronomy

ASTA01Y	2L:T9R2 1T:T10/T11/R11/R3	ASTB01Y	2L:T10R10 1T:R12

The subject matter of astronomy encompasses more than 99.9999 per cent of the observable universe; everything, in fact, above the earth's atmosphere, and even some phenomena such as "shooting stars" which occur within the atmosphere. At Scarborough College the student may elect to sample the full extent of astronomical topics in a survey course, ASTA01Y, or he may delve deeper into astrophysics with the more mathematical and physical course, ASTB01Y.

ASTA01Y **A Survey of Modern Astronomy**

An introductory course which surveys all aspects of extra-terrestrial Universe from the Solar System to the most distant known galaxies and quasars. Emphasis is given to the historical context in which Astronomy has developed, in particular, the connection with the Greek and Roman Empires, the Renaissance, the Reformation, the industrial revolution, and 20th century technology. Theories of the evolution of the Solar System, stars, and the Universe at large are discussed. The more recent techniques of radio astronomy and satellite based observations are described, along with the new information provided and ideas which they have stimulated.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Kronberg

ASTB01Y **Topics in Astrophysics**

This course stresses the application of physics and mathematics to astronomical problems in five main areas:

1. Physics of the Solar System; the determination of the dynamics of the system and of planetary parometers such as mass and chemical composition;
2. Radiative Astrophysics; an introduction to radiative transfer and applications in both optical and radio astronomy;
3. The Structure and Evolution of Stars; a discussion of the equations which govern the lives of stars, and their observational verification;
4. The Structure and Evolution of the Solar System; results of the preceding sections as applied to our nearest star, the sun;

5. The Structure and Evolution of the Universe; an examination of the large-scale constituents of the Universe—galaxies and quasi-stellar objects—and the temporal behaviour of the system as a whole.
Year Course/Prerequisites: PHYA01Y, MATA01Y or MATA55Y
Corequisites: MATB41F
Instructor: Roeder

Biological Science

BIOA01Y 2L:T4R1
3P:T9T10T11/
R2R3R4/
F1F2F3

BIOA02Y 2L:M10F11
3P:T1T2T3/
W9W10W11/
W1W2W3

BIOB02Y 2L:M12T9
3P:T2W3W4/
W9R10R11

BIOB03S 2L:M1T1
3P:T2T3T4

BIOB05Y 2L:T5W9
3P:M2M3M4/
W2W3W4

BIOB06Y 2L:M10W9
3P:W10W11W12

BIOB07Y 2L:M10M11
3P:W10W11W12/
W2W3W4

BIOB08Y 2L:M2R1
3P:R2R3R4

BIOB11Y 2L:M11R12
3P:W10W11W12

BIOB12Y 2L:M5W5
8P:(*Fall term only*)
F9F10F11F12
F1F2F3F4

BIOB13Y 2L:T9M12
3P:T2T3T4

BIOB14Y 2L:T5F4
3P:M2M3M4/
T9T10T11/
T1T2T3

BIOB15F 2L:M1T1
3P:T2T3T4

BIOB16Y 2L:M1T1
3P:R2R3R4/
F9F10F11

BIOB17Y 2L:M5W5
3P:T2T3T4/
R9R10R11

BIOB18F 2L:M9T11
8P:(*every third week*)
F9F10F11F12
F1F2F3F4

BIOB19S 2L:M9T11
8P:(*every third week*)
F9F10F11F12
F1F2F3F4

BIOB20F 2L:T12W2
3P:R9R10R11/
R2R3R4

The study of micro- and macro-organisms of both plant and animal (including man) origin, has developed rapidly as an experimental science since the latter part of the nineteenth century and particularly in the last decade. Modern biology includes the study of both structure and function of all living organisms, involving the application of Chemistry, Physics and Mathematics. Studies of plant form and function have many practical applications such as the development of new varieties which improve food yield. Many

life-saving drugs are derived from plant life. Studies of animal form and function have provided vital information pertaining to man and the study of plant and animal communities is essential in maintaining a balance in nature.

BIOA01Y **Molecular and Cellular Biology**
An introductory lecture and laboratory course dealing with life processes at the molecular and cellular level of organisation.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Kingsley, Israelstam, Sparling, G. N. Smith

BIOA02Y **Organismal and Population Biology**
An introductory course dealing with the biology of whole organisms and their populations.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Campbell, Dengler, Yarranton, Filosa, Youson

BIOB02Y **Basic Microbiology**
This introductory lecture and laboratory course deals mainly with the general properties of bacteria, their structure, function, and relationship to man, employing selected organisms to demonstrate their significance in areas of industry and the health sciences. The latter part of the course presents a survey of bacterial and animal viruses, rickettsias, and fungi.
Year Course/Prerequisites: BIOA01Y, BIOA02Y
Corequisites: CHMB05Y
Instructor: Kingsley

BIOB03S **Phycology**
A lecture and laboratory course on the ecology, physiology and biochemistry of the algae.
Spring Course / Prerequisites: BIOA01Y, BIOA02Y / *Corequisites:* CHMB05Y
Instructor: Sparling

BIOB05Y **Genetics**
A lecture and laboratory course in cytogenetics and the genetics of bacteria, fungi, and Drosophila.
Year Course / Prerequisites: BIOA01Y and BIOA02Y / *Corequisites:* CHMB05Y
Instructor: Filosa

BIOB06Y **Plant Physiology**
A lecture and laboratory course covering aspects of water relations, mineral nutrition, salt uptake and the growth and development of plants.

Year Course / Prerequisites: BIOA01Y, BIOA02Y, CHMA01Y *Corequisites:* CHMB05Y
Instructor: Israelstam, Sparling

)B07Y Developmental Biology (Animal)
A lecture and laboratory course dealing with the molecular and cellular aspects of development, including the principles of development, and some control mechanism of cellular differentiation.
Year Course / Prerequisites: BIOA01Y or BIOA02Y / *Corequisites:* CHMB05Y

)B08Y Invertebrate Zoology
A field-laboratory course dealing with the taxonomy, morphology and ethology of invertebrates with special reference to parasitic forms and their importance to humans. One week is spent in field studies prior to the Fall registration period. It is recommended that students taking this course have had a previous course in Zoology at the university level or Grade 12 (Ontario) Biology.
Year Course/Prerequisite: Permission of instructor/*Corequisite:* None
Instructor: Urquhart

)B11Y Animal Populations and Evolutions
A study of the process of heritable changes in animal populations with special regard to population genetics, population dynamics and species diversity.
Year Course/Prerequisites: None/*Corequisites:* BIOB05Y
Instructor: Campbell

)B12Y Plant Ecology
A course dealing with the response of plants to the environment, in the broadest sense. Plants are studied at the level of the individual and the species and hypothetical higher vegetation units are discussed. Considerable attention is paid to theoretical problems and to the use of mathematical models. Some knowledge of statistics is an advantage.
Year Course / Prerequisites: BIOA02Y, CHMA01Y / *Corequisites:* MATB52F, MATB57S
Instructor: Yarranton

)B13Y Organisation and Phylogeny of Vascular Plants
A lecture and laboratory course on structure, reproduction and phylogeny in the major groups of living and extinct vascular plans. Special emphasis will be given to the development and structure of cells, tissue systems and plant parts in seed plants.
Year Course/Prerequisites: BIOA02Y/*Corequisites:* None
Instructor: Dengler

BIOB14Y Human Biology

A course designed, through lectures and laboratory exercises, to introduce the student to experimental procedures in Zoology using the human body as the experimental animal. Various functions of mammalian organs are discussed with reference to normal as well as malfunctions. It is recommended that students taking this course have had a previous course in Zoology at the university level or Grade 12 (Ontario) Biology.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Urquhart

BIOB15F Limnology

A lecture and laboratory course, with some field work, dealing with the ecology of aquatic organisms, mainly phytoplankton.

Fall Course / Prerequisites: BIOA01Y, BIOA02Y / *Corequisites:* CHMB05Y

Instructor: Sparling

BIOB16Y Comparative Vertebrate Morphology

A lecture and laboratory course on the histological and gross structure of vertebrates with particular reference to their ontogeny and phylogeny. [not open to students who have taken BIOB09Y]

Year Course/Prerequisites: BIOA02Y/*Corequisites:* None

Instructor: Youson

BIOB17Y General and Comparative Physiology

The function of cells and of the organ systems which have evolved to control the environment of the individual cell within the organism. Topics include 1) Body fluids and circulation 2) Ionic and osmotic balance 3) Excretion 4) Gas exchange 5) Nerve and muscle physiology. Much of the comparative material deals with invertebrate forms. [not open to students who have taken BIOB09Y]

Year Course / Prerequisites: BIOA01Y or BIOA02Y / *Corequisites:* CHMB05Y

Instructor: Smith

BIOB18F Cell Metabolism

A lecture and laboratory course dealing with the function of cells. It will include aspects of enzymology, respiratory and photosynthetic metabolism and the control and regulation of metabolism. [formerly half of BIOB01Y; not open to students who have taken that course]

Fall Course/Prerequisites: BIOA01Y, CHMB05Y/*Corequisites:* None

Instructor: Israelstam

BIOB19S Biology of Macromolecules

A general lecture and laboratory course on the metabolism of macromolecules. The course deals mainly with structure, synthesis, breakdown, and functions of DNA, RNA and proteins. [*formerly half of*

BIOB01Y; *not open to students who have taken that course*]
Spring Course/Prerequisites: BIOA01Y/*Corequisites:* CHMB05Y
Instructor: Miyagi

BIOB20F **Cell Ultrastructure**
A lecture, laboratory, and seminar course dealing with the ultrastructure of animal, plant and bacterial cells. [formerly half of BIOB04Y; not open to students who have taken that course]
Fall Course/Prerequisites: BIOB09Y or BIOB13Y/*Corequisites:* None
Instructor: Dengler, Youson, Kingsley

Chemistry

CHMA01Y	2L:M9F10 1T:T1/T5/W2/ R9/F11 3P:T1T2T3/ W9W10W11/ R2R3R4/ F2F3F4	CHMB05Y	2L:W1R12 1T:M10/T10/T12 3P:M2M3M4/ W2W3W4/ F9F10F11
CHMB01Y	3L:M2M3W10	CHMC01Y	2L:R2R3 7P:(*Fall term only*) T10T11T12 T1T2T3T4
CHMB02H	3P:M9M10M11	CHMC12S	3L:M9T5W5
CHMB03Y	2L:W9W2 7P:(*Spring term only*) T10T11T12 T1T2T3T4	CHMC13H	2L:(*Fall term only*) T5W5 4P:(*Spring term only*) R9R10R11R12
CHMB04Y	3L:T9W3R4		

The number of chemistry courses offered at Scarborough will be increased as the College expands and it is intended that students will be able to complete a four-year degree at Scarborough College with sufficient specialisation to qualify for graduate study in chemistry. Additional courses may become available in the 1971-72 academic year, but it may still be necessary for students to take some courses on the St. George campus. In this regard, it should be noted that the chemistry courses offered at the Scarborough campus differ from those offered on the St. George campus: with the exception of CHMA01Y (Scarborough), which is equivalent to CHM12O (St. George), individual Scarborough courses do not have direct equivalents on the St. George campus. Enrolment in individual courses involving transfer between the two campuses will be subject to the approval of the Department of Chemistry. However, the following groups of courses, together with their corequisites and prerequisites, will ensure enrolment in any course in the St. George 400 series indicated:

Scarborough Courses	*St. George Series*
CHMA01Y, CHMB03Y, CHMB04Y, CHMC12S MATA55Y, MATA40F, MATB51F	420
CHMA01Y, CHMB01Y, CHMB02H, CHMB04Y, CHMC01Y	430
CHMA01Y, CHMB04Y, CHMB05Y, CHMC13H	440

The following courses are also of interest to students in chemistry and are particularly recommended to students whose interests tend to physical or theoretical chemistry: MATA45S, MATA58S, MATB40F, MATB50F, MATB41F, MATB56S, PHYB01Y, PHYB02S, PHYB11Y, PHYB12Y.

A01Y General Chemistry

Nuclear Chemistry, atomic and molecular structure, ionic solids; chemical equilibrium in the gas phase and in solution; states of matter and equations of state; first law of thermodynamics, thermochemistry; introduction to kinetic theory of gases and reaction kinetics.

Year Course/Prerequisites: Grade 13 Chemistry or permission of instructor/*Corequisites:* MATA55Y

Instructor: Harris, Riddick, Walker

B01Y Inorganic Chemistry I

Atomic and molecular structure, including energy levels, bonding, electronegativity, lattice energies, heats of formation and hydration, etc. Oxidation state diagrams. Chemistry of hydrides, halogens and selected topics in Main Group elements. Lectures designed to support course CHMB02H, the Analytical Chemistry Laboratory.

Year Course/Prerequisites: CHMA01Y/*Corequisites:* CHMB02H

Instructor: Harris

B02H Analytical Chemistry Laboratory

Qualitative analysis; redox equilibria, pH titrations, precipitation titrations, complexometric titrations, ion exchange, chromatography, Beer-Lambert Law, gravimetric analysis.

Half Year Course/Prerequisites: CHMA01Y/*Corequisites:* CHMB01Y

B03Y Physical Chemistry I

The laws of thermodynamics; their experimental origin and application to topics of chemical interest. Introduction to statistical thermodynamics.

Year Course / Prerequisites: CHMA01Y, PHYA01Y, MATA55Y or MATA 01 Y / *Corequisites:* None

Instructor: Riddick

B04Y Spectroscopy and Molecular Structure

An introduction to the theories of atomic and molecular structure

and spectroscopy, making use of the basic concepts of quantum mechanics. The applications of spectroscopy will also be considered; the final third of the course will deal with the uses of spectroscopy in organic chemistry.

Year Course / Prerequisites: CHMA01Y, PHYA01Y, MATA55Y or MATA01Y / *Corequisites:* CHMB05Y

Instructor: Caton, Lynch

CHMB05Y **Organic Chemistry I**

A lecture and laboratory course on the chemistry of aliphatic and aromatic compounds, with emphasis on reaction mechanisms and synthesis.

Year Course/Prerequisites: None/*Corequisites:* CHMA01Y

Instructor: Lynch

CHMC01Y **Inorganic Chemistry II**

A study of transition metal chemistry including oxidation state diagrams; atomic structure and energy levels; crystal field theory; molecular orbital theory; a thermochemical and structural survey of: 1. divalent ions 2. trivalent and higher oxidation states 3. low oxidation states i.e. carbonyls, nitrosyls, etc.

Year Course / Prerequisites: CHMB01Y, CHMB02H / *Corequisites:* CHMB04Y

Instructor: Walker

CHMC12S **Physical Chemistry II**

Chemical applications of statistical mechanics; statistical thermodynamics; kinetic theory of gases; applications to chemical kinetics.

Spring Course / Prerequisites: CHMA01Y, MATA55Y or MATA01Y, PHYA01Y / *Corequisites:* CHMB03Y, CHMB04Y

Instructor: Caton

CHMC13H **Organic Chemistry II**

A lecture and laboratory course on advanced organic chemistry. Emphasis will be placed on stereochemistry, mechanisms of organic reactions, molecular rearrangements, and further aspects of synthesis.

Half Year Course/Prerequisites: CHMB05Y/*Corequisites:* None

Instructor: Lynch

Classics

These courses are intended to provide, for the student who is not able to read the literature of the Greco-Roman World in the original languages, some appreciation of Greco-Roman civilization through the study of appropriate texts in translation. But, though the courses are directly concerned with the literature (of the various *genres*), the philosophy, and the historical and religious thought of the Greeks and Romans, their content is much wider than these specific subjects;

in every case the special topics considered will be examined with a view to furthering our understanding of the ancient world and of the relationship between that world and our own. Students will be encouraged to read widely and critically, to contribute to discussions of their reading and to report their findings in literate and original essays.

General Classics

CLAB02Y	1L:T2 2T:F3F4
CLAB03F	2L:M2W2
CLAB08S	2L:T1R12
CLAB22S	2L:M11T11
LAT001Y	4L:M12T10W9R10
LAT002F	3L:M3T1R12 1P:W3
LATB01F	3T:W2R2F12
LATB02S	3L:M4T9R9
LATB13F	3T:M4T9R9
LATB22S	3L:M5W5R1
LATB24F	3L:T12W12R3
LATB27S	3L:R2F11F12
LATB28S	3L:T12W12R3
GRK001Y	4L:M10W10R11F9 1P:F3
GRKB01F	3T:M11T3W4 1P:W1
GRKB12S	3L:T3W4R1
GRKB21F	3L:M5W5R1
GRKB26F	*Arrange with Instructor*
GRKB27S	*Arrange with Instructor*
GRHB01Y	3L:W9F9F10
GRHB02Y	2L:M10R10 1T:W11/W12
GRHB03Y	2L:M3W12 1T:F10/F11
GRHB21F	2L:M1W3 1T:M4
GRHB22S	2L:M1W3 1T:M4
GRHB23Y	3T:M2W9F3

301F Epic Poetry: Homer, Virgil and Lucan

Four epic poems are read in translation: the *Iliad* and *Odyssey* of Homer, the *Aeneid* of Virgil and the *Pharsalia* of Lucan. In addition, the development of the genre in Greek and Latin literature is discussed with reference to other epic poems. Emphasis is placed on the poems themselves, but there is also discussion of the historical, social and cultural background. [*Course not offered in 1970-71*]

Fall Course/Prerequisites: None/*Corequisites:* None

302Y Greek and Roman Tragedy

The tragedy of the Greeks and Romans: an exploration of the nature and intent of Classical tragic drama, its convictions, historical origins and cultural context, with a discussion of selected plays by Aeschylus, Sophocles, Euripides and Seneca.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Warden

CLAB03F **Love Poetry**

A discussion of the treatment of the theme of love in Classical literature and the development of erotic poetry as a literary genre, with a study of selected poems of Sappho, the Greek Anthology, Catullus, Propertius, and Ovid.

Fall Course/Prerequisites: None/*Corequisites:* None

Instructor: Warden

CLAB04S **Satire**

A study of the development of this distinctively Roman genre from its origins into the Empire, with reading in translation of the works of Horace, Persius, Juvenal and Petronius. Attention will be given to the literary and social role of the satirist, the influence of the historical and cultural milieu, and the impact of classical satire on such English writers as Dryden, Pope and Donne. [*Course not offered in 1970-71*]

Spring Course/Prerequisites: None/*Corequisites:* None

CLAB06S **Ancient Historiography**

A study of the ancient historians (Herodotus, Thucydides, Livy and Tacitus), their historical thought and their literary techniques; special attention will be given to the intellectual development of the historians in their environment. All texts will be read in translation. [*Course not offered in 1970-71*]

Spring Course/Prerequisites: None/*Corequisites:* None

CLAB08S **The Ancient Novel**

The cosy Greek escapist novel, index of a society of reduced political views will be studied in the pages of its five major practitioners [Achilles Tatius, Chariton, Heliodorus, Longus and Xenophon of Ephesus]. The Roman counterpart is represented by the *Satyricon* (the sensual and intellectual odyssey of three antiheroes) and the imagination and humorous Metamorphoses of Apuleius.

Spring Course/Prerequisites: None/*Corequisites:* None

CLAB09H **Greek and Roman Comedy**

A selection of comedies from the works of Aristophanes, Menander, Plautus and Terence will be read and discussed. Topics will include the nature and purpose of comedy, the origins and development of Greek Comedy, and the contributions of Plautus and Terence to the genre. [*Course not offered in 1970-71*]

Half Year Course/Prerequisites: None/*Corequisites:* None

CLAB21Y **Greek and Roman Religion**

An exploration of the nature and range of religious experience. Among the topics discussed will be the nature and function of mythology and its relation to religion, Homer and the Olympian gods, myth and philosophy, mystery religions and popular cults, paganism and Christianity. [In 1970-71 this course will be offered in

Extension only. It is, however, open to all students]
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Warden

CLAB22S **Literary Criticism**
Reflections of the Greeks and Romans on literature, the techniques of composition and the nature of inspiration, from the dawn of literary self-consciousness to the development of systematic literary theory, with readings from Plato, Aristotle, Horace and Longinus.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Warden

FARB23S **Art and Culture in 5th Century Greece**
An exploration of the culture of Classical Greece through its architecture, sculpture and vase painting.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Schaefer, Boddington, Irwin and Warden

Latin

The following courses are designed to acquaint the student with representative works from various periods and *genres* of Latin literature, emphasizing through study of the texts, an appreciation of language and style; and, through consideration of their literary and historical background, a basic familiarity with classical Roman civilization. The development of a critical reading knowledge of both prose and verse will be stressed, and language study will be directed to this end.
There are two courses of an introductory nature, LAT001Y, for which no knowledge of Latin is assumed, and LAT002F for students with Grade 13 Latin. Students who have Grade 13 Latin may be admitted to LATB01F or LATB02S without having LAT002F as a prerequisite provided that they demonstrate that they have the linguistic competence necessary for these courses. Students who wish to take LATB01F or LATB02S as their first Latin course should register initially for LAT002F.
Students with Grade 12 Latin may be admitted to LAT002F. They should consult the instructor.

LAT001Y **Introductory Latin**
The purpose of this course is to acquaint the student with the essentials of the Latin language. Although the emphasis will be linguistic, selected texts will be read to introduce the student to Latin literature. On completion of the course a student will be equipped to proceed to LATB01F or LATB02S. Language Laboratory may be used.

Year Course/Prerequisite: None/*Corequisite:* None
Instructor: McDonald

T002F Intermediate Latin
An introduction to Latin literature and the history of the language through the reading of selected texts. Accidence and syntax will be reviewed. Emphasis will be placed on helping the student acquire fluency in reading Latin. The Language Laboratory will be used.
Fall Course/Prerequisites: Grade 13 Latin/*Corequisites:* None
Instructor: Grant

TB01F Catullus
A representative selection of the work of Catullus will be read—love poems, epigrams, and "long" poems. The influences which affected Catullus and his contribution to Latin poetry will be considered.
Fall Course/Prerequisites: LAT001Y or LAT002F or Grade 13 [with placement test]/*Corequisite:* None
Instructor: Grant

TB02S Catiline
Sallust's *Catilinarian Conspiracy* and selections from Cicero's *Orations in Catilinam* will be read. The texts will provide an opportunity of comparing two accounts of the same events from both a literary and historical viewpoint.
Spring Course/Prerequisites: LAT001Y or LAT002F or Grade 13 with placement test/*Corequisites:* None

TB11S Ovid
Selections from Augustan poetry, with reading from Ovid's elegiac and hexameter verse *(Amores I, Metamorphoses VIII)* and emphasis on the appreciation of poetic language and style. [*Course not offered in 1970-71*]
Spring Course/Prerequisites: LATB01F or LATB01S or LATB02S
Corequisites: None

TB12F Livy
Books 21 and 30 of Livy's history of Rome will be read, with attention given to the events of the Second Punic War as Livy recounts them, the writer's historical aims and methods, and his place in Augustan literature. [*Course not offered in 1970-71*]
Fall Course/Prerequisites: LATB01F or LATB01S or LATB02S
Corequisites: None

TB13F Virgil I
A selection of the *Eclogues* and two books of the *Georgics* will be read. The way in which Virgil treats the traditional genres of bucolic and didactic poetry, the purpose of the poems and their significance

with respect to Virgil's own poetic development and achievement, will be discussed.

Fall Course/Prerequisites: LATB01F or LATB02S/*Corequisite:* None

LATB21F Virgil II

Reading of three books of the *Aeneid*, as a basis for study of Virgil's epic technique, with emphasis on the appreciation of language and style, the writer's contribution to the development of the genre, and poem's significance as a mythological and historical document. [*Course not offered in 1970-71*]

Fall Course/Prerequisites: LATB01F, or LATB01S or LATB02S
Corequisites: None

LATB22S Horace

A careful study of a selected number of Horace's *Odes* and *Epodes*, with attention to such aspects as form and structure, poetic imagination, and literary convention. The selection of poems will embrace such themes as Horace and his work, Horace and the State, wealth and contentment; time and nature, life and death, love; religion.

Spring Course/Prerequisites: LATB01F/*Corequisites:* None
Instructor: McDonald

LATB23S Satire

A study of representative pieces from two distinct strains of Roman satire, that of Horace and that of Juvenal, with attention to the role of the satirist in both literary and social terms. [*Course not offered in 1970-71*]

Spring Course/Prerequisites: LATB01F, or LATB01S or LATB02S
Corequisites: None

LATB24F Lucretius

Reading from Lucretius' didactic poem *De Rerum Natura* with investigation of such topics as form, language, imagery, and the relationship of Lucretius to his predecessors. Both the philosophical background of the poem and its contemporary purpose will be examined. Specific topics may include Lucretius' theories of matter, space and cosmology; mind and spirit; sensation; the growth of human society.

Fall Course/Prerequisites: LATB01F/*Corequisites:* None
Instructor: McDonald

LATB25F Plautus and Terence

An introduction to the drama of the Roman republic, through the reading of three Latin comedies (including Plautus' *Rudens* and Terence's *Phormio*), with attention to the nature and development of Roman comedy. [*Course not offered in 1970-71*]

Fall Course/Prerequisites: LATB01F, or LATB01S or LATB02S
Corequisites: None

ΓB26S Tacitus

Books 11 and 12 of the *Annals* of Tacitus will be read, with emphasis on the author's literary and historical aims and methods. [*Course not offered in 1970-71*]

Spring Course/Prerequisites: LATB01F or LATB01S or LATB02S

Corequisites: None

ΓB27S Propertius and Tibullus

A study of selected poems of two outstanding figures in the development of Roman Erotic Elegy.

Spring Course/Prerequisites: LATB01F or LATB02S

Corequisites: None

Instructor: Warden

ΓB28S Cicero's Letters

A selection from Cicero's correspondence will be read to gain a more intimate insight of Cicero's personality and of his attitude to the turbulent events and to the other protagonists in the struggle for power in the late republic. Literary and stylistic aspects will also be considered.

Spring Course/Prerequisites: LATB01F or LATB02S

Corequisites: None

Instructor: Grant

Greek

An introductory course is offered in the study of classical Greek, on completion of which the student is ready to read Greek literature. Students with varied interests will be attracted to the study of Greek so that they may read in the original works which continue to influence their field, e.g. lovers of literature will find masterpieces of many *genres*; students of philosophy the beginnings of European philosophy; and historians eye-witness accounts of a fascinating period of history.

001Y Introductory Greek

This course is based on a structural approach to language learning. The language laboratory will be used. Readings of Greek prose will begin early in the course.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Irwin

B01F Plato *Apology*, **Lysias** *In Eratosthenem*

Socrates' speech in his defence will be read, with accompanying exercises to assist the student in further study of the Greek language. Lysias' speech prosecuting his brother's supposed murderer will also be read.

Fall Course/Prerequisites: Grade 13 Greek or GRK001Y
Corequisites: None
Instructor: Irwin

GRKB11S **Homer,** *Odyssey*
The wanderings of Odysseus—a reading of 3 books of the *Odyssey* with discussion of the nature and literary qualities of Homeric epic. [*Course not offered in 1970-71*]
Spring Course/Prerequisites: GRKB01F/*Corequisites:* None

GRKB12S **Herodotus**
Selections from the "Father of History" will be read with discussion of the literary qualities of the work and the historical background.
Spring Course/Prerequisites: GRKB01F/*Corequisites:* None
Instructor: Irwin

GRKB21F **Sophocles,** *Antigone*
A detailed study of Antigone from both the linguistic and dramaturgical viewpoints. The place of Sophocles in the development of Greek tragedy will be examined.
Fall Course/Prerequisites: GRKB11S or GRKB12S
Corequisites: None

GRKB22F **Aristophanes,** *Clouds*
A detailed study of Aristophanes' play with examination of the origins, nature and development of Greek comedy. [*Course not offered in 1970-71*]
Fall Course/Prerequisites: GRKB01F/*Corequisites:* None

GRKB26F **Directed Reading**
This course, like GRKB27S, is designed for students who are capable of reading Greek on their own with profit and its purpose is to provide them with the opportunity of reading more widely in areas which interest them. Each student will be assigned to an instructor who will choose the texts to be studied taking into consideration the interests of the students. The student will meet his supervisor once a week to discuss topics and difficulties which arise in his reading.
Fall Course/Prerequisites: GRKB21F or GRKB22F
Corequisites: [GRKB21F or GRKB22F may be taken as corequisites]

GRKB27S **Directed Reading**
[See GRKB26F above]
Spring Course/Prerequisites: GRKB11S or GRKB12S
Corequisites: None

Greek and Roman History

Greek and Roman History is a study of the history of the Greco-Roman world in antiquity. Like any historical study, its aim is two-

fold, to determine and convey the essence of Greek and Roman civilization and, by doing so, to further our understanding of man in society, then as now. Since the study is thus humanistic in the widest sense, students of ancient history will concern themselves not only with political history, but with the social and cultural significance of the ancient world as well. Emphasis will throughout be placed on reading of primary source material – what the Greeks and Romans themselves wrote – wherever possible; and, though no knowledge of Greek or Latin is required, those who are able to do so will be encouraged to extend their reading from translations to the original accounts. Thus all students will be expected to pursue independent research, to participate in group discussions of their findings, and to give final written form to their work in careful, original and literate essays.

HB01Y History of Greece from 800 B.C. to the Death of Alexander

Political, economic, social and cultural aspects. As far as possible, this course will be studied through the Greek authors (in translation) and attention will be given to the discoveries of archaeology, and its methods. Principal topics include: The World of Homer, past and present; Evolution of Democracy; Sparta, ideal and reality; Athens and Democratic Imperialism; Achievements of Alexander.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Boddington

HB02Y Greek and Roman History from the death of Alexander to the Gracchi

A study of the emergence and evolution of the Hellenistic Monarchies after the death of Alexander, the development of Rome as a "World Power", and the interaction of Greek and Roman worlds, with its internal effects on both.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Derow

HB03Y Roman History from the Gracchi to Nero

A study of the Roman Republic as a social and political organization, and as a "World Power". The collapse of the republican system of government and the reconciliation of republican forms with military despotism and increasing bureaucracy. This course will emphasize close study of the primary sources for the period; these sources will be read in translation.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Corbett

HB21F Greek Democracy

The central theme will be Athenian democracy; how it evolved, how it worked, and how it compared with other forms of democracy in the Greek world. The subject will be studied, as far as possible, through the relevant Greek authors (in translation).

Fall Course/Prerequisites: GRHB01Y or any related Classics course
Corequisites: None
Instructor: Boddington

GRHB22S **The Greeks Overseas**
This course will deal with two closely related topics:
(1) the interaction of the Greeks with other races, and the impact of this process on Greek culture,
(2) the role of the sea, in war and trade, in the history of Greece.
Spring Course/Prerequisites: GRHB01Y or a related Classics course
Corequisites: None
Instructor: Boddington

GRHB23Y **Studies in Roman History**
This course is intended for the more advanced student; while no prerequisite is indicated, students will be required to demonstrate that they possess the necessary background. Special topics or periods will be chosen for study; some of the possible areas of study are the following: Roman Imperialism, Roman Political History, The Roman Conquest of Italy, The Decline of the Roman Empire, Rome and the Jews. But the final choice of subject(s) of concentration will be governed by the interests of the students and faculty involved.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Corbett

Commerce

COM100Y 2L:M7:30-9:30

COM100Y **Financial Accounting**
This is the same course as COM 100 on the St. George campus. It is a required course in the Commerce and Finance programme. Any Scarborough students who plan to transfer to the St. George campus in Second Year to enter Commerce and Finance should consider taking this course as well as ECOA01Y and MATA55Y.
Year Course/Prerequisites: None/*Corequisites:* None

Comparative Literature

LITB01F 2L:T3F3
LITB02S 2L:T3F3
LITB03F 2L:T5R12
LITB04Y 2L:M12M5

LITB01F **Emergence of Modern Prose**
A study of the "Crisis of Consciousness" and its impact on the subject-object relationship; a comparative analysis of narrative techniques as well as of the transformation of the empirical world

in modern European literature. The following authors will be considered: Joyce, Woolf, Proust, Maeterlinck, Jacobson, Hofmannsthal, Rilke, Musil, Kafka.
Reading knowledge of French, German or Russian recommended.
Fall Course/Prerequisites: None/*Corequisites:* None
Instructor: Wittmann

ITB02S Guilt and Conscience in Post-World War II Literature
Estrangement and search for identity, guilt and conscience in post World War II Russian and German literatures. An analysis of the literature of indictment including, among others, works by Boll, Borchert, Grass, Lenz, Dudintsev, Ehrenburg, Pasternak and Solzhenitsyn.
Reading knowledge of French, German or Russian recommended.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Ponomareff

ITB03F Romanticism
Readings in Coleridge, Goethe, Keats, Flaubert, Leopardi, Schopenhauer, Nietzsche, Carlyle.
Fall Course/Prerequisites: Permission of Instructor/*Corequisites:* None
Instructor: Kay

ITB04Y Contemporary Literatures in English: West Indies, Africa and Australia
The course will endeavour to compare and contrast the literature of the West Indies, Africa, India and Australia tracing similar themes and patterns that appear in the writings of all four areas.
The following authors will be considered: Wilson Harris, V. S. Naipaul, Chinua Achebe, Wole Soyinka, J. P. Clark, Roger Rao, Patrick White and Randolph Stow.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Howard

ITC01S Lyric Poetry of the Middle Ages in the Mediterranean Area
A comparative analysis of one or several representative texts or collections of texts from Hispano-Arabic, Galaico-Portuguese, Castilian, Provençal, Catalán, Italian and Sicilian sources; supplementary lectures concerning Classical and Mediaeval Rhetorics and Arts of Poetry, versification, metrics and basic Mediaeval rhetorical terminology. Given in English. [*Course not offered in 1970-71*]
Spring Course/Prerequisites: The student preferably should be in the 3rd or 4th year, and a literature student, with possibly Latin and/or one language other than English/*Corequisites:* None
Instructor: Barta

Economics

SOSA01F	2L:W10R10 1T:M9/M10/R3	ECOB04Y	3L:T9T10R10
ECOA01Y	2L:M3R3/M10R4 1T:*(every second week)* F9/F10/F11	ECOB05Y	3L:M12W3F1
		ECOB06Y	3L:T2R2F2
		ECOB07S	2L:T11T12
ECOB01Y	3L:M1T4W9	ECOB08F	3L:M1T1R1
ECOB02Y	3L:M4W4R4	ECOB09F	2L:T11T12
ECOB03Y	3L:T3R9R3	ECOB10Y	2L:M4M5

SOSA01F **Quantitative Methods in Social Sciences**

This course is designed to introduce students to the basic statistical techniques used in the Social Sciences. Students who plan programmes in Economics, Geography or Political Science are encouraged to take this course.

Fall Course/Prerequisites: None/*Corequisites:* None

ECOA01Y **Introduction to Economics**

This course is concerned fundamentally with the question why we are as well off as we are, and why some of us are much better off and others much worse off than the average. The approach is that expressed by J. M. Keynes: "Economics does not furnish a body of settled conclusions immediately applicable to policy, it is a method, a technique of thinking, which helps its possessor to draw correct conclusions".

Year Course/Prerequisites: None/*Corequisites:* None

ECOB01Y **Price Theory**

An intermediate level development of the principles of microeconomic, or price and allocation theory. The primary emphasis is on developing the apparatus of static partial equilibrium analysis. The subject also extends briefly to problems of general market equilibrium and economic welfare.

Year Course/Prerequisites: ECOA01Y/*Corequisites:* None

Instructor: Bucovetsky

ECOB02Y **National Income and the National Economy**

An intermediate level exposition of macroeconomic theory, or the theory of the aggregate national income. The subject matter is how the level of total national output is determined, and associated problems of the level of employment, business fluctuations, long term growth, price levels, and balance of payments adjustment.

Year Course/Prerequisites: ECOA01Y/*Corequisites:* None

Instructor: Bucovetsky

ECOB03Y North American Economic History

This course is intended as a survey of important themes in the economic history of Canada and the United States. A comparative approach is employed to develop such themes as the role of natural resource staple industries, the evolution of financial institutions, problems of industrialization and urbanization, and the relationship of the state to economic change in the two countries.

Year Course/Prerequisites: ECOA01Y/*Corequisites:* None

ECOB04Y European Economic History

A study of the economic development of Western Europe from the Middle Ages to the present time. Particular attention is given to the parts played by trade, capital accumulation, technology, public policy, and the cultural characteristics of capitalist society in this process.

Year Course/Prerequisites: ECOA01Y/*Corequisites:* None

Instructor: Rea

ECOB05Y Quantitative Methods in Economics

The purpose of this course is to introduce the student to elementary statistics and their application to economic problems. In addition other quantitative techniques used in economics will be discussed. Special reference will be made to sources and uses of quantitative economic data in Canada.

Year Course/Prerequisites: ECOA01Y or MATA01Y or MATA55Y *Corequisites:* None

ECOB06Y Literature of Political Economy

A study of the classical literature of political economy; especially of selections from the works of Adam Smith, Malthus, Ricardo, J. S. Mill, Marx, Jevons, Marshall and Keynes.

The study of the literature is intended to improve the students' understanding of contemporary economic literature and of the contemporary economic world. It should also improve his ability to assess the wisdom of contemporary economic policies. Problems of method and conflicts of value are discussed.

Year Course/Prerequisites: ECOA01Y/*Pre- or Corequisites:* ECOB01Y or ECOB02Y

Instructor: Bladen

ECOB07S Public Finance

This course deals with the public sector of the Canadian economy, and in particular how resources are obtained from the public through taxation and allocated through government spending. Some attention will also be given to the use of government fiscal policy to regulate the level of economic activity.

Spring Course/Prerequisites: ECOB01Y and ECOB02Y [may be taken

as corequisites]/*Corequisites:*[see note under prerequisites]
Instructor: Bucovetsky

ECOB08F **Industrial Organization**
Fall Course/Prerequisites: ECOB01Y/*Corequisites:* ECOB02Y
Instructor: Wyman

ECOB09F **Economic Development**
A term course analysing the processes of economic growth and development. Special attention will be given to the problems of devising policies to promote the development of less developed countries and regions.
Fall Course/Prerequisites: ECOB01Y/*Corequisites:* ECOB02Y
Instructor: Rea

ECOB10Y **Comparative Economic Systems**
Year Course/Prerequisites: ECOA01Y/*Corequisites:* None
Instructor: Pelikan

ECOB11Y **Money and Banking**
An introduction to the operation of the money market. The focus will be on analysis of monetary theory and monetary policy. [In 1970-71 this course will be given in Extension only; it is, however, open to all students]
Year Course/Prerequisites: ECOA01Y/*Corequisites:* None
Instructor: Donner

English

ENGA01Y	2L:T9F9/R1F1/ R3F3/M12W5/ M5W11/M4W4
ENGA04Y	2L:R4F4/M4W4
ENGA05Y	1L:W12 1T:R9/R11
ENGB02Y	2L:M4W4
ENGB04Y	2L:R11R2
ENGB05Y	2L:W4R3
ENGB06Y	2L:W11F3
ENGB09Y	2L:M9W10
ENGB10Y	1L:W10 1T:M1/M2/R10/R11
ENGB11Y	1L:W12 1T:W2/F11/F12/F2
ENGB14Y	2L:W3R12/T2R4
ENGB15Y	2L:W1R3
ENGB16Y	2L:M3W1
ENGB22Y	2L:M11W11/T5W5
ENGB35Y	1L:W9 1T:M2/M3/F1/F2/ F3
ENGC07Y	*Arrange with Instructor*

English Studies have as their subject matter all the communicative arts in English. Existing courses are designed to present the major genres of poetry, fiction and drama, but facilities are expanding to include films and television. The range of subject matter encompasses

the study of English, Canadian, and American literatures, and to a limited extent other literatures in English.

Because English Studies are concerned with the communicative arts, much emphasis is given to close and responsive critical reading, clarity of expression, and the development of the powers of criticism and judgement. The programme is directed toward the broadening of experience, the refinement of feeling and judgement and the expansion of the imagination.

Those who wish to prepare themselves for the Specialist Certificate of the Department of English (a four-year programme) will be advised to choose eight or nine of the required courses over a period of three years. Moreover, all students are advised to combine English courses with appropriate courses in other disciplines; i.e., with courses in Classics concerned with literary criticism, comedy, tragedy, and satire; with historical period courses in French and other foreign languages; or with courses in Aesthetics, History, Fine Arts, and Comparative Literature. Courses in contemporary literature may also be profitably combined with studies in Anthropology, Sociology or Philosophy. In this respect, Canadian Literature may best be studied as part of the College's Canadian Studies Programme.

Nevertheless, English Studies at Scarborough College recognize their primary concern for the communicative arts in English and the student contemplating enrolling in these courses should do so for the values to be found in this pursuit.

GA01Y Forms of Twentieth Century Literature

Novels and shorter works by five of the following authors: Cary, Faulkner, Fitzgerald, Heller, Hemingway, Lawrence, Richler, Waugh. Plays by five of the following authors: Albee, Beckett, Brecht, O'Neill, Osborne, Pinter, Shaw, Synge. Poems from *20th-Century Poetry & Poetics* (ed. Geddes), including poems by Auden, Eliot, Frost, Olsen, Stevens, Thomas, Williams, Yeats. Additional works at the discretion of the instructor.

The course is designed to explore the range of forms, themes and techniques of modern writers.

Year Course/Prerequisites: None/*Corequisites:* None

GA04Y English Literature: Forms and Approaches

This course is based on a thorough study of five major works representing different forms and periods in English Literature. It aims at a survey and critical assessment of the approaches or methods used by critics of these works. [Previously numbered ENGB08Y; not open to students who have taken that course]

Year Course/Prerequisites: None/*Corequisites:* None

GA05Y Canadian Literature in English

A study of Canadian Literature from Confederation to the present. Texts to be announced.

Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Margeson

ENGB01Y **Old English Language and Literature**
[*Course not offered in 1970-71*]
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Patenall

ENGB02Y **Chaucer**
Lyrics, *House of Fame, Parliament of Fowles, Troilus and Criseyde, Canterbury Tales* (selection), (Text: F. N. Robinson, ed.)
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Vicari

ENGB04Y **English Poetry, Prose and Drama, 1660-1800**
This course will study the poetry, prose and drama of the Restoration and Eighteenth Century with special reference to the work of Dryden, Pope, Swift and Johnson.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Howard

ENGB05Y **Romantic Literature**
A study of the writings of Wordsworth, Coleridge, Byron, Keats, Shelley, and their contemporaries.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Kay

ENGB06Y **Victorian Poetry**
A study of the range of Victorian poetry with concentrated attention given to Tennyson and Browning. Other authors for study will be selected from Arnold, Beddoes, Clough, Fitzgerald, Hardy, Hopkins, Meredith, Morris, D. G. Rossetti, Swinburne, Poe and Whitman. Some critical writing of the period will also be read.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Thomas

ENGB07Y **Fiction 1832-1900**
[*Course not offered in 1970-71*]
Year Course/Prerequisites: None/*Corequisites:* None

ENGB09Y **Poetry and Prose of the English Renaissance**
PROSE: More, *Utopia*; Machiavelli, *The Prince*; Montaigne, *Essays* (trans. Florio); Sidney, *An Apologie for Poetrie*; Bacon, *Advancement of Learning (Book I)*; *Essays* (selections); *New Atlantis*; Donne, *Paradoxes and Problems* (selections); *Devotions upon Emergent Occasions* (selection); *Sermon at the Funeral of Sir William Cockayne*; Browne, *Urn Burial* (Chaps. III, IV, V); Milton, *Areopagitica*.
POETRY: *Spenser, Epithalamion; Sonnets* (selections); *Fowre Hymnes*; *Faerie Queene (Books I & II)*; Shakespeare, *Sonnets*

(selections); *Venus and Adonis*; Donne, Herbert, Herrick, Marvell (selections); Milton, *Ode on the Morning of Christ's Nativity*; *Lycidas*; *Paradise Lost.*

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Vicari

ENGB10Y **Shakespeare**

Special study of *Romeo and Juliet, A Midsummer Night's Dream, Richard II, Henry IV Parts 1 & 2, Twelfth Night, The Tempest, Measure for Measure, Hamlet, Antony and Cleopatra,* and *King Lear.* [Previously numbered ENGA02Y; not open to students who have taken that course]

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Patenall

ENGB11Y **Varieties of Drama**

Beckett, *Waiting for Godot*; Congreve, *The Way of the World*; Eliot, *Murder in the Cathedral*; *Everyman*; Jonson, *The Alchemist*; Shakespeare, *As You Like It* or *Merchant of Venice*; Shakespeare, *King Lear*; Shaw, *Heartbreak House* or *St. Joan*; Synge, *The Playboy of the Western World*; Thomas, *Under Milk Wood*; at least nine more plays, chosen so as to extend the range of types of drama, and to illuminate by comparison the listed texts.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Tait

ENGB14Y **Varieties of Fiction**

An exploration of prose fiction ranging through many periods and genres.

Reading list to be supplied through the Divisional Office.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Martineau

ENGB15Y **English Poetry, A Study of Various Forms**

A comparative study of forms, modes, themes, and styles of poetry from various periods.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Kirkham

ENGB16Y **The English Novel**

The readings in this course will be taken from various periods, with no historical perspective. The course has no theme, but is centred on the concept of the novel as creative art.

Year Course/Prerequisites: One other course in English/
Corequisites: None

Instructor: Kay

ENGB22Y **American Literature 1865—Present**

Mark Twain, James, Faulkner, Eliot, Stevens, Williams. Additional

authors, especially from the contemporary period, to be selected.
Year Course/Prerequisites: ENGA03Y/*Corequisite:* None
Instructor: Martineau

NGB35Y Four Major Modern Authors
An approach to modern literature through an intensive study of four representative authors.
Year Course/Prerequisites: None/*Corequisites:* None
Instructors: Kirkham, Tait

NGC07Y Special Studies
One of a group of seminars on particular authors or topics. The seminars will be limited in size and will require a B-level course as prerequisite. Seminars to be offered in 1970-71 will be announced in the spring term. One of these will be "Literature and the Film", for which the prerequisite will be B11 or B14.
Year Course/Prerequisites: One B-level course/*Corequisites:* None

ITB04Y Contemporary Literatures in English
[for course description see COMPARATIVE LITERATURE LITB04Y]
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Howard

Fine Art

FARA01F	3L:T2W1F10	FARB08F	2L:T3F9
FARA02S	3L:T2W1F10	FARB09S	2L:T3F9
FARB05F	2L:T4R10	FARB10Y	3P:M2M3M4/ R2R3R4
FARB06S	2L:T4R10		
FARB07F	2L:T11W10	FARB23S	2L:T11W10

In this subject library sources, slides, reproductions and photographs provide material for two approaches to study and interpretation:
i) Historically, as the visual and most concrete evidence of civilization by which the student will become acquainted with the main intellectual, religious, political and social trends as they have found expression in art. He will thus be introduced to a cultural history of a broad and international character.
ii) Aesthetically, as monuments of the creative mind. The interpretation of composition, of "design" in its wider sense, will make him aware of the values of beauty and give basis for intelligent aesthetic judgement.

RA01F Introduction to Ancient and Mediaeval Art
A broad introduction to the history of ancient and mediaeval art and architecture through study of major monuments. Students will be required to complete assigned background readings as well as be conversant with the material in H. W. Janson's *History of Art* to

equip them for participation in class discussions.
Fall Course/Prerequisites: None/*Corequisites:* None
Instructor: Schaefer

ARA02S Introduction to Art from 1400 to the Present
Problems of methodology, iconography, and terminology in art from the Renaissance to the contemporary period. The course will include informal discussions between students and instructor.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Scavizzi, Vastokas

RA03Y Introductory Drawing
A studio course dealing with problems of drawing.
[In 1970-71 this course will be offered in Extension only. It is, however, open to all students]
Year Course/Prerequisites: None/*Corequisites:* None

RB01F Romanesque Art
An intensive study of the esthetic principles, characteristics of style, dominant themes, and technical innovations of Western European art of the period 1050 to 1200. [*Course not offered in 1970-71*]
Fall Course/Prerequisites: FARA01F/*Corequisites:* None
Instructor: Schaefer

RB02S Gothic Art
The art and architecture of the years 1150 to 1420 in Western Europe will be studied to show its genesis, development, and diffusion, and its position as a mirror of mediaeval culture. [*Course not offered in 1970-71*]
Spring Course/Prerequisites: FARA01F/*Corequisites:* None
Instructor: Schaefer

RB03F Renaissance Art
The architecture, sculpture and painting of the Renaissance in Europe (ca. 1400-1600) with primary emphasis on Italy. [*Course not offered in 1970-71*]
Fall Course/Prerequisites: FARA02S/*Corequisites:* None

RB04S Baroque Art
Art and architecture in Europe, ca. 1600-1700 [*Course not offered in 1970-71*]
Spring Course/Prerequisites: FARA02S/*Corequisites:* None

RB05F 19th Century Art
This course aims to introduce and define the major stylistic events of the 19th century in Europe. Special emphasis will be given to the period 1886-1905 with a view to establishing the character of the arts against the social and cultural background of Europe.

Fall Course/Prerequisites: FARA01F or FARA02S or a B-level course
Corequisites: None
Instructor: Vastokas

FARB06S **20th Century Art**
This course continues the survey of modern art begun in FARB05F and considers painting, architecture, and sculpture from 1905 to the present.
Spring Course/Prerequisites: FARA01F or FARA02S
*Corequisites:*None
Instructor: Vastokas

FARB07F **Early Mediaeval Art**
A survey of Early Christian, Byzantine, and Western mediaeval art through 1050.
Fall Course/Prerequisites: FARA01F/*Corequisites:* None
Instructor: Schaefer

FARB08F **Painting in Flanders and Germany Ca. 1420-1530**
An intensive study of "Northern Renaissance" painting in Flanders and Germany, including the work of Van Eyck, Bosch, Dürer, and Grünewald.
Fall Course/Prerequisites: FARA01F/*Corequisites:* None
Instructor: Scavizzi

FARB09S **Baroque Architecture in Italy and France**
A study of Italian and French architecture of ca. 1600-1750, including the works of Bernini, Borromini, and Mansart.
Spring Course/Prerequisites: FARA02S/*Corequisites:* None
Instructor: Scavizzi

FARB10Y **Introduction to the Visual Arts**
A general introduction to the theory and practice of colour, drawing, and two-and three-dimensional design.
Year Course/Prerequisites: Permission of the instructor
Corequisites: None

FARB11Y **Intermediate Studio**
An exploration in depth of the problems studied during the first year studio course.
[*Course not offered in 1970-71*]
Year Course/Prerequisites: FARB10Y/*Corequisites:* None

FARB23S **Art and Culture in Fifth Century Greece**
An exploration of the culture of classical Greece through its architecture, sculpture, and vase painting.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Schaefer, Boddington, Irwin, Warden

French

FREA01Y	3T:M9W9F9/ M10W10F10/ M11W11F2 2P:T9/T10/T11/T12/ T1/T2&R9/R10/ R11/R12/R1/R2	FREB25Y	1L:T2 1T:F10
		FREB26Y	1L:T9 1T:R12
		FREB28Y	1L:M1 1T:W1
FREA02Y	1L:T12/T3 1T:R1/F3	FREB30Y	1L:T11 1T:R9
FREA11Y	1T:W9 1T:F2	FREB32Y	1L:T2 1T:W3
FREB21Y	3L:M12R1F12/ M2W12R2 1P:M3/F2	FREB34Y	1L:M11/W12 1T:W9/F12
		FREB36Y	1L:T3 1T:R1
FREB23Y	2T:M10W11	FREC01Y	3L:M3T1W2 1P:R3
FREB24Y	1L:W10 1T:F1		

Our basic course, French A01Y, assuming satisfactory completion of Grade XIII French or equivalent is devoted to consolidating the previous experience of students in reading, writing and speaking French, while acquainting them with the range of advanced studies open to them in university and providing some significant experience in various areas, such as language, literature and civilization. This basic course will include intensive language practice, and much of this will involve carefully planned work in the language laboratory. Supplementary to the basic course, one literature course devoted to French literature of the nineteenth and twentieth century will be offered. In these courses the student will be introduced to the intensive study of vital works of literature and made aware of various critical approaches. Finally, one series of courses will be available designed for students who would like to continue their reading of French without studying the subject intensively.

More advanced courses in French will normally embrace a choice of up to four courses from the following groups: 1 the main trends of French and French-Canadian literature; 2 various *genres*—poetry, theatre, and the novel—in various periods; 3 advanced language and 4 language practice courses.

From such a wealth of courses students of widely differing tastes and needs may select satisfying programmes. All courses, unless otherwise specified, are conducted in French.

A01Y Preparation for University French Studies

A basic course for students intending to devote a significant part of their undergraduate studies to French language and/or literature. The major part of it is devoted to practical language work (phonetics,

language laboratory, oral classes, written composition).
Year Course/Prerequisites: Grade 13/*Corequisites:* None

FREA02Y **Studies in Modern French Literature**
A detailed study of selected works from the fields of French poetry; novels and dramas of the 19th and 20th centuries. The course is intended as a practical introduction to techniques of literary criticism and analysis as applied to French literary works.
Year Course/Prerequisites: Grade 13/*Corequisites:* FREA01Y

FREA11Y **Readings in French Literature**
For students who do not intend to devote a large part of their studies to French language and/or literature. The course will concentrate each year on one particular mode or theme. For 1970-71 the theme will be "Man and society in French fiction", a study of sociological problems as reflected in selected works of contemporary French and French Canadian fiction.
Year Course/Prerequisites: Reading knowledge of French tested by an entrance examination for those without Grade 13 French/*Corequisites:* None

FREB21Y **Language Practice**
A continuation of first year language work, including grammar, composition, oral practice, pattern drills and language laboratory work. [Previously numbered FREB01Y; not open to students who have taken that course]
Year Course/Prerequisites: FREA01Y/*Corequisites:* None

FREB22Y **The Classical Current**
This course is primarily concerned with the 17th century and the great writers of that period; however, works from other periods which are in some way related may also be studied. [*Course not offered in 1970-71*] [Previously numbered FREB02Y; not open to students who have taken that course]
Year Course/Prerequisites: FREA01Y/*Corequisites:* None

FREB23Y **General History of the French Language**
A historical survey of the evolution of French as one of the Romance languages, its formation, development and present state. [Previously numbered FREB05Y; not open to students who have taken that course]
Year Course/Prerequisites: FREA01Y/*Corequisites:* None

FREB24Y **The Philosophical Current in French Literature**
This course is primarily intended to study the works of the 18th century "philosophes", such as Montesquieu, Voltaire and Rousseau. However, works from other periods which are related in some way may also be studied. [Previously numbered FREB04Y; not open to students who have taken that course]
Year Course/Prerequisites: FREA01Y/*Corequisites:* None

REB25Y Introduction to French Linguistics

A study of linguistic theories from the beginning of the 20th century as applied to modern French. [Previously numbered FREB03Y; not open to students who have taken that course]

Year Course/Prerequisites: FREA01Y/*Corequisites:* None

EB26Y The Romantic Current in French Literature

This course is primarily a study of some of the works (poetry, prose, drama) of the main writers associated with French Romanticism in the 19th century. However, works from other periods which are in some way related may also be studied. [previously numbered FREB06Y; not open to students who have taken that course]

Year Course/Prerequisites: FREA01Y/*Corequisites:* None

EB28Y French Drama from 1600-1800

This course provides a study of dramatic styles and techniques through a reading of representative plays of the 17th and 18th centuries.

Year Course/Prerequisites: FREA01Y/*Corequisites:* None

EB30Y French Drama from 1800

This course is primarily intended to provide a means of understanding various dramatic styles and techniques through a study of representative French plays of the 19th and 20th centuries. [Previously numbered FREB08Y; not open to students who have taken that course]

Year Course/Prerequisites: FREA01Y/*Corequisites:* None

B32Y French Prose Fiction from 1800-1900

A study of important prose works (novels and short stories) representative of the main currents of 19th century French literature (Romanticism, Realism, Naturalism, etc.). [Previously numbered FREB10Y; not open to students who have taken that course]

Year Course/Prerequisites: FREA01Y/*Corequisites:* None

834Y French Prose Fiction from 1900

A study of important prose works (novels and short stories) representative of the main trends of 20th century French literature. [Previously numbered FREB12Y; not open to students who have taken that course]

Year Course/Prerequisites: FREA01Y/*Corequisites:* None

336Y The Literature of French Canada

A study of representative works of French-Canadian literature from a historical and esthetic point of view with main emphasis on the contemporary period. [Previously numbered FREB16Y; not open to students who have taken that course]

Year Course/Prerequisites: FREA01Y/*Corequisites:* None

FREC10Y **Language Practice**

This course is a continuation of FREB21Y and is designed to advance the student's competence in written and spoken French.

Year Course/Prerequisites: FREB21Y or B01Y/*Corequisites:* None

Geography

SOSA01F	2L:W10R10 1T:M9/M10/R3	GGRB04Y	2L:W11R11 1T:T11/T4
GGRA01Y	2L:W1F12 2T:R1R2/R3R4/ F9F10	GGRB05Y	2L:F11F2 1T:M5/F3
GGRA02Y	2L:T11T12 2P:T3T4/W10W11	GGRB06Y	2L:T9R9 2T:T11T12
GGRB01Y	2L:M1F1 1T:W3/W4	GGRB07Y	2L:W4W5 2P:T1T2
GGRB02Y	2L:M2M3 2P:M9M10	GGRB08Y	2L:W11W12 2T:F9F10
GGRB03Y	2L:T3R2 1T:W2/W5		

Geography is concerned with the spatial distribution of physical and human phenomena and with the association of things that distinguish one area of the earth from another.

The face of the earth is made up of many different kinds of features, each of which is the momentary result of a continuing process. Many kinds of physical and cultural processes operate and the result of the interaction of processes is that the face of the earth is marked off into distinctive areas. Geography seeks to interpret the significance of the similarities and differences among areas in terms of causes and consequences.

SOSA01F **Quantitative Methods in Social Sciences**

This course is designed to introduce students to the basic statistical techniques used in the Social Sciences. Students who plan programmes in Economics, Geography or Political Science are encouraged to take this course.

Fall Course/Prerequisites: None/*Corequisites:* None

GGRA01Y **Introduction to Human Geography**

An introduction to the main ideas and fields of interest in human geography, including the distribution and growth of world population, major cultural and economic contrasts, forms of settlement and urbanization. This course involves lecture, practical and seminar work.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Cave

RA02Y Introductory Physical Geography

An introductory survey of the principles of physical geology and physical geography. Included is a brief review of earth materials, the rock cycle, subsurface and surface processes, structure of the atmosphere, and current theories on the origin and development of the lithosphere and biosphere.

Year Course/Prerequisite: None/*Corequisite:* None

Instructor: Greenwood

RB01Y Geography of Resources

Problems of resource use with particular reference to their environmental setting.

Year Course/Prerequisites: GGRA01Y or ESCA01Y

Corequisites: None

Instructor: Tayyeb

RB02Y Geographic Methods

The aim of the course is to introduce students to a few of the elementary analytical techniques which are at present used in geography. Emphasis is placed on the accumulation and presentation of geographic information and the subsequent analysis of quantitative data. The course includes a study of aerial photogrammetric techniques, field and lab techniques, data presentation and basic statistical methods.

Year Course/Prerequisites: GGRA01Y or ESCA01Y

Corequisites: None

Instructor: Bunce, Swain

B03Y The Atmosphere

An analytical approach to weather, climate and atmospheric pollution with special reference to current environmental problems and research. The course is designed to provide the general student with a better grasp of the diverse character of the earth's atmosphere as a functional component of the human environment.

Year Course/Prerequisites: GGRA01Y or ESCA01Y

Corequisites: None

Instructor: Francis

B04Y Geography of Canada

This course will deal with selected problems and areas of Canada from a geographic standpoint. It is not intended as a general survey course, but rather one in which several major issues are examined in some detail. These will include Canadian resources, the challenge of the North, the settlement of Canada, transportation, regional disparity, French Canada and urbanization.

Year Course/Prerequisites: GGRA01Y/*Corequisites:* None

Instructor: Francis, Cave

GGRB05Y **Urban Geography**

An introductory course focusing on the characteristics and major problems of North American cities under the following headings: urbanization and processes of urban growth; systems of cities; urban form and design; spatial structure of urban land uses and activities; distinctive socio-economic areas within the city; circulation, transportation and migration; city planning and renewal.

Year Course/Prerequisites: GGRA01Y or GGRB02Y
Corequisites: None
Instructor: Swain

GGRB06Y **Economic Geography**

An introduction to the geography of world economic activity, including an examination of: the geographical variation in the level of economic development; the inter-relationship of consumption, production and exchange; the process of agricultural and industrial production; economic and location theory; transportation; the growth of service industries; problems of economic development.

Year Course/Prerequisites: GGRA01Y and GGRB02Y
Corequisites: None
Instructor: Bunce

GGRB07Y **Geomorphology**

A detailed evaluation of the processes contributing to the continuing modification of the earth's surface features. Modern developments in the field will be reviewed followed by an examination of the physical and chemical aspects of weathering, mass wasting and models of slope development, glacial and periglacial processes, fluvial geomorphology and river mechanics and problems of coastal erosion and sedimentation.

Year Course/Prerequisites: ESCA01Y/*Corequisites:* None
Instructor: Greenwood

GGRB08Y **Geography of Underdeveloped Areas**

An examination of the definition, nature, performance and probblems of underdeveloped areas.

Year Course/Prerequisites: GGRA01Y and GGRB02Y
Corequisites: None
Instructor: Tayyeb

German

GERA01Y	3L:M9W2F3 2P:F9W4	GERB15F	3L:M9W2F2
		GERB16S	3L:M9W2F2
GERB01F	3L:M3W3F12	GERC01F	*Arrange with Instructor*
GERB02F	3L:M10W12F10		

GERB03S 3L:M3W3F12
GERB04H 2T:M2W4
GERB12Y 3L:M11W11R1

GERC01S *Arrange with Instructor*
GERC04H 2T:M11W11

Modern literature in Germany developed late. The first great writers appeared towards the end of the eighteenth century. But for Lessing, Goethe, and Heine to Brecht and Thomas Mann they have remained vigorous and individualistic, and concerned with the widest range of human problems, philosophical and psychological, moral and religious, social and economic.

The courses in German offer a thorough study of the language and of the more important authors. Language study includes phonetics and laboratory work, oral expression, translation, and essay-writing.

:A01Y Introduction to German Language and Literature

Intensive language work, focusing on oral and written composition. Close readings of poetry, drama, and prose of the 20th century.

Year Course/Prerequisites: Grade 13 or equivalent/*Corequisites:* None

RB01F Introductions to Epochs before 1775

The course is to provide the student with a background in German literary history, so that he will be better equipped to understand the development from the middle of the 18th century onward.

Fall Course/Prerequisites: GERA01Y/*Corequisites:* GERB04H

Instructor: Wittmann

.B02F 20th Century Prose

A study of essays, novels, short stories, and novellas by such authors as Mann, Musil, Kafka, Brecht, Böll, Grass, et. al.

Fall Course/Prerequisites: GERA01Y/*Corequisites:* GERB04H

B03S 20th Century Drama and Poetry

The course will deal with plays by Wedekind, representative playwrights of Expressionism, Brecht, Frisch, Dürrenmatt, younger German writers such as Hochhuth, Kipphardt, Weiss. The poetry will be selected from the works of Rilke, George, Hoffmannsthal; the Expressionists Heym, Trakl, Benn, Lasker-Schuler; Kaschnitz, Celan, Enzensberger, et. al.

Spring Course/Prerequisites: GERA01Y/*Corequisites:* GERB04H

304H Advanced Conversation and Composition

A continuation of the language work done in GERA01Y on a higher level.

Half Year Course/Prerequisites: GERA01Y/*Corequisites:* Any one of: GERB01F, GERB02F, GERB03S, GERB11Y, GERB12Y, GERB15F, GERB16S

GERB11Y **Classicism**

The classical works of Schiller and Goethe will be at the core of this course. At the same time, literary critical and cultural critical writings by such men as Winckelmann and Herder will be discussed along with essays and the exchange of letters by Schiller and Goethe. [*Course not offered in 1970-71*]

Year Course/Prerequisites: GERA01Y, GERB01F
Corequisites: GERB04H

GERB12Y **Literature of "Sturm und Drang" and Romanticism**

The early dramatic and poetic writings of Goethe and Schiller, e.g. *Gotz von Berlichingen* and *Die Räuber*, will be studied along with works by authors such as Lenz, Klinger, et. al. The themes and forms first emerging in the Sturm und Drang will be shown to find renewed and somewhat altered expressions in the critical deliberations of the Schlegel brothers and their friends, as well as in the poetry and prose of such writers as Novalis, Tieck, Brentano, and Eichendorf.

Year Course/Prerequisites: GERB01F/*Corequisites:* GERB04H

GERB15F **19th Century Prose**

The course will be concerned with the novellas and novels by writers such as Storm, Droste-Hülshoff, E. T. A. Hoffmann, Keller, Fontane, Hauptmann, et. al.

Fall Course/Prerequisites: GERA01Y/*Corequisites:* GERB04H

GERB16S **19th Century Drama and Poetry**

The development of drama from Büchner to Hauptmann. The discussion of plays by these authors and by Grabbe, Grillparzer, and Hebbel will show different tendencies evolving at this time, often summarily referred to as dramatic theatre versus epic theatre. The poems will be selected from the late Romanticists, some of the above mentioned authors, Heine, Mörike, et. al.

Spring Course/Prerequisites: GERA01Y/*Corequisites:* GERB04H

GERC01F
GERC01S **Seminars on Special Topics**

The content of this seminar will be agreed upon by the professor and the student(s) involved. The topics, generally speaking, will be more specialised than in any of the other courses, the work more intensive.

Fall and Spring Course/Prerequisites: GERB01F, GERB04H
Corequisites: GERC04H

GERC04H **Stylistics**

Building on the more general language work done in A 1 and B 4, this course will be concerned with the finer points of expository and creative writing and close text analysis.

Half Year Course/Prerequisites: GERB04H/*Corequisites:* Any one of: GERB02F, GERB03S, GERB11Y, GERB12Y, GERB15F, GERB16S, GERC01F, GERC01S

History

HISA01Y	2L:T2R9 1T:W9/W10/W12/ W3/W4	HISB13Y	2T:T11T12
HISB01Y	2L:T10R9 1T:R10/R11/R1/F2/ F3	HISB17Y	2T:T9T10
HISB03Y	2L:T4R1 1T:M4/T10/T11/T1/ R3/R4/R5	HISB19Y	2F11F12
HISB05F	2L:T1R4 1T:R11/R12/F9/ F10/F11	HISB33Y	2T:F1F2
HISB06S	2L:T1R4 1T:R11/R12/F9/ F10/F11	HISB35Y	2T:M1M2
		HISB41F	2T:M3M4
		HISB42S	2T:M3M4
		HISC01F	*Arrange with Instructor*
		HISC01S	*Arrange with Instructor*

History seeks to describe the activities of men and societies in the past, and in the process to provide a fuller understanding of the present. The writing and criticizing of essays is also stressed. History, which is based on written records, is a form of literature and loses much value if its findings are not communicated in clear and effective writing. At the same time, the sources of these findings must be carefully assessed and precisely reported, for the historian must use the most accurate data available in trying to analyze men and societies in the past. Thus History is both a "humanistic study" and a "social science" since it has many of the characteristics and concerns of both these general fields.

A01Y Introduction to European History

A survey of European society from the Middle Ages to the present. This course will examine major trends in politics, economy, society and thought. Reading will be from selected primary and secondary sources. This course serves as a prerequisite to advanced courses in European history.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Marrus, Pearl

B01Y British History Since 1785

An examination of the forces, political, social, economic and religious, which transformed an aristocratic society into a world-wide industrial power and the reason for its subsequent decline.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Kenyon

B03Y History of the United States

General survey of American political economic and diplomatic his-

tory from the Revolution to the present day.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Sheps, Dick

HISB05F **Canadian History to 1867**
Exploration and settlement: the institutions and life of New France: the British Conquest and its results in North America: the impact of the American Revolution on British North America: the economic, political and social developments of the British colonies in North America: the confederation movement.
Fall Course/Prerequisites: None/*Corequisites:* None
Instructor: Moir

HISB06S **Canadian History Since Confederation**
Confederation and the consolidation of the Dominion: national development and World War I: the development of dominion status: the Great Depression and regional political reactions: external relations and involvement in World War II.
Spring Course/Prerequisites: None/*Corequisites:* None
Instructor: Moir

HISB07Y **Russia Since the Ninth Century**
The Russian people, state and culture with emphasis on major institutional, social and ideological changes. *First term:* the origins of Russian history, paganism and Christianity, Mongol influences, the forging of Muscovite autocracy, westernization to 1800; *Second term:* the imperial regime, the radical intelligentsia, the Revolution and the establishment of the Soviet regime, the Stalin revolution in agriculture, industry and society, foreign relations. [In 1970-71 this course will be offered in Extension only, on Thursday evenings. It is, however, open to all students]
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Dyck, Rossos

HISB13Y **European Urban History**
This seminar will examine the city as a historical institution from the rise of the Mediaeval town to the city of the industrial age. Emphasis will be upon social and intellectual factors, though other areas such as urban planning and architecture will be discussed.
Year Course/Prerequisites: HISA01Y/*Corequisites:* None
Instructor: Pearl

HISB17Y Details of this course will be announced in April. Students are invited to obtain details at that time from the Registrar's Office, the Office of the Division of Humanities, or from the staff in History.

HISB19Y **British Empire—Commonwealth from 1850**
An examination of imperialism, nationalism and racial problems in

the contemporary world. Particular attention will be paid to developments in Asia and Africa.
Year Course/Prerequisites: HISB01Y/*Corequisites:* None
Instructor: Kenyon

[SB31Y The South before the Civil War
Social structure and social conflict in the old South, the development of southern culture, the relationship between ideology and institutions.
Slavery as a social and economic system, the political economy and practices of the South, and the growth of southern nationalism and separatism from the colonial period to the Confederacy. [*Course not offered in 1970-71*]
Year Course/Prerequisites: HISB03Y/*Corequisites:* None
Instructor: Sheps

SB33Y American Social and Intellectual History to 1860
Radical experiment and reaction in the New Republic. The ideas and institutions which helped to shape American society and politics, with emphasis on religious and social radicalism, the problem of the Negro and Slavery, regional, especially southern culture, and political ideology. Concentration in the early 19th century, but themes of continuing influence from the pre-Revolutionary and Revolutionary period will also be examined.
Year Course/Prerequisites: HISB03Y/*Corequisites:* None
Instructor: Sheps

SB35Y American Labour History
A study of the institutions, personalities and ideas of the American labour movement from the beginnings of industrialization to the present. Includes topics such as the reform tradition in American Federation of Labour. First term, a colloquium surveying broadly the whole subject: second term will take up selected topics on a seminar pattern.
Year Course/Prerequisites: HISB03Y/*Corequisites:* None
Instructor: Dick

41 F Old Huronia
The political, social, religious and economic life of the Huron Indians at the time of European contact: the Christian missions to the Hurons: the effects of European contact on Indian life: the collapse of the Jesuit missions and the dispersal of the Hurons. Examination of these and related aspects of Huron history will be based on extensive use of primary source material.
Capacity—15 students.
Fall Course/Prerequisites: None/*Corequisites:* None
Instructor: Moir

HISB42S **Church – State Relations in Canada**

A study based on primary source material of the connection of church and state in such areas as land endowment, education, legal establishment and social issues. Capacity – 15 students.

Spring Course/Prerequisites: None/*Corequisites:* None

Instructor: Moir

HISC01F
HISC01S **Advanced Reading Programme on Special Topics**

A reading and study course, with a programme to be planned in consultation between student and instructor. In special circumstances may be made a year course.

Fall and Spring Course/Prerequisites: Permission of instructor/ *Corequisites:* None

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Italian

ITAO01Y	4L:M9W10F11F12 1P:W2	ITAB21Y	3T:M10W10F1
		ITAB31Y	3T:M4W1F4
ITAO02F	3L:M10W10F10	ITAB33F	3T:M3W3F3
ITAO04S	3T:M2W2F12	ITAB34S	3T:M3W3F3
ITAB11Y	3T:M11W4F9	ITAB42H	2L:M5W5

There are certain courses given in other areas which may prove directly valuable to the student as adjuncts to his plan of studies, or may be of interest as an enrichment of his total programme. We strongly suggest that each student read in detail the course listings of special interest to him in other areas, and seek personal academic counselling from his instructors so as to receive maximum value and satisfaction from his studies here at Scarborough College.

ITA001Y **Introductory Italian**

Main elements of the Italian grammar. Stress will also be given to oral practice in the classroom and in the laboratory. Short contemporary texts will be studied and translated in the second term.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Sanguinetti

ITA002F **Intermediate Italian**

Intensive review of the grammar. Drills, exercises and compositions to develop greater skill in writing and speaking the language.

Fall Course/Prerequisites: ITA001Y/*Corequisites:* None

Instructor: Costa

ITA004S **Advanced Composition and Conversation**

Study and analysis of selected texts, translations and compositions. The aim of the course is to further develop the student's ability to speak, read and write the language and to enable him to approach

learned and literary texts with relative ease and confidence.
Spring Course/Prerequisites: ITA002F/*Corequisites:* None
Instructor: Costa

ıB11Y Twentieth Century Literature and Culture
The aftermath of Italian unification. From Decadentism to Existentialism. The problems, issues, ideas and personalities in the last hundred years of Italian history as reflected in the novel, drama and poetry.
Year Course/Prerequisites: ITA002F/*Corequisites:* None
Instructor: Costa and others

ıB21Y Introduction to Italian Literature
A survey of Italian literature, from the Middle Ages to the present. Emphasis will be given to periods and authors of major importance.
Year Course/Prerequisites: ITA002F/*Corequisites:* None
Instructor: Costa

B31Y Dante and Mediaeval Culture (in Translation)
Introduction to mediaeval Italian literature and culture; their origins and development, leading up to Dante and the masterpiece of mediaeval literature, *The Divine Comedy*; a brief survey of Dante's minor works; their significance in terms of the life and culture of the time.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Franceschetti

B33F Aspects of Italian Thought in the XV and XVI Centuries
The origins of Italian Humanism with Petrarch and Boccaccio; its development in the XV Century with Valla, Ficino and Pico; its full flowering in the Renaissance with the political theories of Machiavelli and Guicciardini. A study of Castiglione's figure of *The Courtier*.
Fall Course/Prerequisites: ITA002F/*Corequisites:* None
Instructor: Franceschetti

B34S The Renaissance Epic
A brief survey of the origins of epic poetry in the Middle Ages will precede the study of the masterpieces of the Renaissance Epic: Pulci's *Morgante*, Boiardo's *Orlando Innamorato*, and Ariosto's *Orlando Furioso*.
Spring Course/Prerequisites: ITA002F/*Corequisites:* None
Instructor: Franceschetti

336F Lyric Poetry of the Renaissance (from Poliziano to Michelangelo)
Conception of Love, Nature, Beauty and Life in 15th century poets (Poliziano, Lorenzo de'Medici, Boiardo). Petrarchism and Neo-Platonic love in the 16th century (Bembo, Stampa and Michelangelo). [*Course not offered in 1970-71*]
Fall Course/Prerequisites: ITA002F/*Corequisites:* None
Instructor: Franceschetti

ITAB40S **Reformation and Baroque Literature**

The creation of a new lyric expression in Tasso's *Gerusalemme Liberata* and other poetry. Its development in Marino and the *Marinisti*. Aspects of philosophical, religious, political and historical thought of the period (Bruno, Campanella, Botero and Sarpi). [*Course not offered in 1970-71*]

Spring Course/Prerequisites: ITA002F/*Corequisites:* None

Instructor: Franceschetti

ITAB42H **Italian Romanticism**

Reading of selected works of Foscolo, Leopardi and Manzoni. The characteristics of Italian Romanticism, its connection with the movement for unification, in the context of European Romanticism.

Half Year Course/Prerequisites: ITA002F/*Corequisites:* None

Instructor: Costa

Linguistics

LINA01Y 3L:M9W1R9

LINA01Y **General Linguistics**

In the introductory course various methods of linguistic analysis will be discussed as well as the sound and form systems which make up language. Among the questions considered will be the processes of producing and comprehending original utterances, first and second language acquisition, and the structures which underly actual utterances.

Year Course/Prerequisites: None/*Corequisites:* None

LINB02Y **Bases of Linguistic Theory**

Textbook: *Hockett*, A Modern Course in Linguistics. Other required and other recommended books. Papers on individual research and reading. About one-quarter of the course recapitulates LINA01Y and intensifies that. Total course is designed for specialists and serves as pre-professional training. [*Course not offered in 1970-71*]

Year Course/Prerequisites: LINA01Y/*Corequisites:* None

Instructor: Salus

Mathematics

MATA20F 2L:W5R5

MATA25S 2L:W5R5

MATA40F 2L:M1F11
2T:M9M10/T9T10/W1W2/F3F4

MATA45S 2L:M1F11
2T:M9M10/T9T10/W1W2/F3F4

MATA55Y 2L:W12R11/T12R10
2T:M9M10/M3M4/T9T10/T11T12/T1T2/T3T4/R9R10/F11F12

MATA57S 2L:M4W4
2T:W1W2/R3R4

MATA58S	2L:M2F12 2T:W11W12/ R3R4/F1F2
MATB30F	3L:M10R12R2
MATB35S	3L:M10R12R2
MATB40F	3L:M1R11F11
MATB41F	3L:M4W4F9
MATB45S	3L:M1R11F11
MATB50F	3L:M9W11F12
MATB51F	3L:W10R10F10
MATB52F	3L:M3W3F3
MATB53F	3L:M12T9R9
MATB55S	3L:M9W11F12
MATB56S	3L:W10R10F10
MATB57S	3L:M3W3F3
MATB58S	3L:M12T9R9
MATC40F	3L:M11W2R3
MATC45S	3L:M11W2R3
MATC50F	3L:T10W11F12
MATC51F	3L:M2T11W12
MATC55S	3L:T10W11F12
MATC60F	3L:M12T9R9
MATC65S	3L:M12T9R9

Mathematics may be considered as the art or science of making deductions from given statements. Both the deductions themselves, and the methods used to make them come within the scope of mathematics, while the original statements called hypotheses, largely do not. The immense power and utility of mathematics have arisen because the results deduced apply to any collection of objects or ideas satisfying the hypotheses.

As the abstract and structural aspects of mathematics have been developed and as the quantitative features of the newer sciences have come to be recognized, new needs for mathematics and new kinds of mathematics to meet the needs have appeared with increasing frequency.

'A20F Nature of Mathematics I

A historical and philosophical look at Mathematics, its methodology and its relationship to reality. [formerly half of MATA02; not open to students who have taken that course]

Fall Course/Prerequisites: None/*Corequisites:* None

'A25S Nature of Mathematics II

A discussion of logic, set theory, abstractions, models, axiomatic system. [formerly half of MATA02; not open to students who have taken that course]

Spring Course/Prerequisites: MATA20F/*Corequisites:* None

A40F Introduction to Linear Algebra

Discussion of the basic concepts in E^3. Co-ordinate systems, vectors, inner product, vector product, planes, lines, linear functions, matrices, linear combinations, linear equations. [formerly MATA03F; not open to students who have taken that course]

Fall Course/Prerequisites: Grade 12 Math/*Corequisites:* None

A45S Linear Algebra I

Basic properties of groups and fields, abstract vector spaces, subspaces, factor spaces, linear independence, dimension, basis, linear

transformations, matrices, determinants, systems of linear equations.
Spring Course/Prerequisites: MATA03F or MATA40F or Grade 13 Math B/*Corequisites:* None

MATA55Y **Calculus**
A continuation of Grade 13 Calculus. Limits, differentiation, integration, partial derivatives, multiple integrals, differential equations, applications of calculus to natural and social sciences. [formerly MATA01Y; not open to students who have taken that course]
Year Course/Prerequisites: MATA03F or MATA40F or Grade 13 Math A/*Corequisites:* None

MATA57S **Probability**
Probability models, sampling, product models, conditional probability, random variables, special distributions. [formerly MATA04S; not open to students who have taken that course]
Spring Course/Prerequisites: Grade 12 Math/*Corequisites:* None

MATA58S **Introduction to Computers and Programming**
Algarithms and flow charts, and introduction to stored-programme computers and programming, elementary applications in data processing, non-numerical problems, and simulations. [formerly MATA05F; not open to students who have taken that course]
Spring Course/Prerequisites: Grade 12 Math/*Corequisites:* None

MATB30F **Geometry I**
A modern approach to Euclidean Geometry with emphasis on the axiomatic method, modification of the axioms to yield non-Euclidean forms of Geometry and comparison of synthetic and metric Geometry. [formerly half of MATB05Y; not open to students who have taken that course]
Fall Course/Prerequisites: MATA45S or MATB02Y
Corequisites: None

MATB35S **Geometry II**
A continuation of Geometry I. Absolute Geometry, parallel projections, isometrics, area, ruler and compass constructions, further topics. [formerly half of MATB05Y; not open to students who have taken that course]
Spring Course/Prerequisites: MATB30F/*Corequisites:* None

MATB40F **Linear Algebra II**
Dual space, inner product spaces, orthonormal basis, eigenvalues, eigenvectors, reduction of symmetric matrices.
Fall Course/Prerequisites: MATA45S or MATA03F
Corequisites: None

MATB41F **Vector Calculus**
Differential and integral calculus of functions of a vector variable,

with emphasis on vectors in E^2 and E^3, line and surface integrals, Green's theorem and Stokes' theorem. This course tends to careful formulation of results without emphasis on proofs. [formerly MATB04F; not open to students who have taken that course]
Fall Course/Prerequisites: MATA55Y or MATA01Y
Corequisites: MATA40F

TB45S Linear Algebra III
Canonical forms; bilinear, quadratic and hermitian forms; spectral properties, exterior algebra, tensors.
Spring Course/Prerequisites: MATB40F/*Corequisites:* None

TB50F Analysis I
The real number system, topology of E^n, completeness, connectedness, compactness. Infinite sequences and series. Continuous and differentiable functions of one and several variables. Uniform continuity. The Riemann Integral. [formerly MATB01F; not open to students who have taken that course]
Fall Course/Prerequisites: MATA01Y or MATA55Y
Corequisites: None

TB51F Differential Equations I
First and second order ordinary differential equations, operational methods, variation of parameters, solution in series. [formerly half of MATB07Y; not open to students who have taken that course]
Fall Course/Prerequisites: MATA01Y or MATA55Y
Corequisites: None

TB52F Statistics I
Common distribution, point and interval estimations. Further topics. Applications.
Fall Course/Prerequisites: MATA01Y or MATA55Y and MATA04S or MATA57S/*Corequisites:* None

TB53F Computing I
Fortran programming and applications. Further topics.
Fall Course/Prerequisites: MATA05S or MATA58S
Corequisites: None

TB55S Analysis II
Infinite sequences and series of functions, power series in particular. Implicit function theorems. Curves, surfaces, and integrals on them. Vector formulations of divergence theorem and Stokes' theorem.
Spring Course/Prerequisites: MATB01Y or MATB50F
Corequisites: None

TB56S Differential Equations II
Existence and uniqueness theorem for linear differential equations, dimension of the solution space. Variation of parameters and Green's

functions. The Laplace transform. The gamma function. Separation and comparison theorems, self adjoint form. Bessel functions. [formerly half of MATB07Y; not open to students who have taken that course]
Spring Course/Prerequisites: MATB51F and MATA03F or MATA40F
Corequisites: None

MATB57S **Statistics II**
Standard significance test, analysis of variance. Further topics. Applications.
Spring Course/Prerequisites: MATB52F/*Corequisites:* None

MATB58S **Computing II**
Continuation of MATB53F.
Spring Course/Prerequisites: MATB53F/*Corequisites:* None

MATC40F **Algebra I**
An introduction to modern algebra. Peano Postulates. Integers, congruences, factorisation. Rational Numbers. [formerly half of MATB02Y; not open to students who have taken that course]
Fall Course/Prerequisites: MATA45S/*Corequesites:* None

MATC45S **Algebra II**
A continuation of MATC40F. Rings, integral domains, fields, polynomials. Extension fields, finite fields, Galois theory. [formerly half of MATB02Y; not open to students who have taken that course]
Spring Course/Prerequisites: MATC40F/*Corequisites:* None

MATC50F **Real Analysis I**
Sets, Cardinals. Metric spaces, topological spaces, separation axioms, Tychonoff's theorem. [Not open to students who have taken MATB08S]
Fall Course/Prerequisites: MATB55S/*Corequisites:* None

MATC51F **Differential Equations III**
Bases in infinite dimensional Euclidian spaces. Fourier series. Boundary value problem for ordinary differential equations and for partial differential equations, wave and heat equations. Boundary value problem for Laplace's equation.
Fall Course/Prerequisites: MATB07Y or MATB56S
Corequisites: None

MATC55S **Real Analysis II**
Introduction to Lebesgue integration, Hilbert spaces, integral equations.
Spring Course/Prerequisites: MATC50F/*Corequisites:* None

MATC60F **Complex Analysis I**
Complex plane, Riemann sphere, elementary functions, conformal

mappings, Cauchy's integral formula, the residue calculus.
Fall Course/Prerequisites: MATB55S/*Corequisites:* None

ATC65S Complex Analysis II
Infinite products, elliptic functions, analytic continuation.
Spring Course/Prerequisites: MATC60F/*Corequisites:* None

Philosophy

PHLA01Y	3L:M10T10F10/ M1T1F11/ M2W2F9/ M3T3W3/ T11W11R11	PHLB63S	3L:M12T10R10
PHLB51F	3L:T10R10F1/ T11R11F10	PHLB64S	3L:T1R1F1
PHLB52F	3L:M2T3R3	PHLB65F	3L:M1M2T1
PHLB53F	3L:M11W11F11	PHLB66S	3L:M4T4R4
PHLB54F	3L:T1W1R1	PHLB67S	3L:M11T11W11
PHLB55F	3L:T2R3F3	PHLB69F	3L:T9T10F12
PHLB56F	3L:T12R1F1	PHLC52F	3L:M3M4W4
PHLB56S	3L:M1M2T1	PHLC53S	3L:M3M4W4/ T3T4F1
PHLB57S	3L:M4R1R2	PHLC54S	3L:T10R10F1
PHLB62S	3L:M2T2F11	PHLC60S	3L:T1W1R1
		PHLC65S	3L:M1R12R3/ M12T12W12
		PHLC66S	3L:M10M11W10

Philosophy consists in a critical analysis of the fundamental ideas and concepts at the roots of such major areas of human concern as science, society, religion, morality and art. Its aim is to scrutinize the basic notions in these areas, to clarify the principles on which they are founded, to evaluate such fundamental beliefs for their soundness, and to explore their implications for a comprehensive understanding of the world in which we live. Philosophy originates in the desire to know, and its value consists in the systematic development of a questioning attitude and critical awareness.

HLA01Y Introduction to Philosophy
An introduction to the problems and areas of philosophy: logic, ethics, knowledge, God, mind, and freedom.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Members of Department

HLB51F Ethics
An introduction to topics in moral philosophy, relativism, subjectivism, egoism, utilitarianism, and others.
Fall Course/Prerequisites: [a previous term in Philosophy is recom-

mended but not required]/*Corequisites:* None
Instructor: Miller

PHLB52F **Political Philosophy**
A study of such topics as the nature of the state, its justification, its proper limits, and the obligations of a citizen. [formerly PHLB05; not open to students who have taken that course]
Fall Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None
Instructor: Graham

PHLB53F **Logic, First Course**
An introduction to formal techniques: sentence logic, quantification, and perhaps probability. [formerly PHLB31; not open to students who have taken that course]
Fall Course/Prerequisites: None/*Corequisites:* None

PHLB54F **Theory of Knowledge**
An introduction to problems concerning knowledge and belief: perception, induction, memory, certainty, and others. [formerly PHLB33; not open to students who have taken that course]
Fall Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None
Instructor: Miller

PHLB55F **Metaphysics**
A study of such topics as causation, space and time, particulars, substance, qualities, free will, and personal identity. [formerly PHLB34; not open to students who have taken that course]
Fall Course/Prerequisites: [A previous term in Philosophy is strongly recommended but not required]/*Corequisites:* None

PHLB56F **Philosophy of Religion**
PHLB56S A study of such topics as the nature and existence of God, immortality, God and morality, and religious language and symbolism. [formerly PHLB21; not open to students who have taken that course]
Fall and Spring Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None
Instructor: Gooch

PHLB57S **Aesthetics**
A study of such topics as the nature and functions of art, the creative process, aesthetic experience and aesthetic evaluation. [formerly PHLB23; not open to students who have taken that course]
Spring Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None
Instructor: Hartman

HLB60F Philosophy in Literature
A study of philosophical ideas as expressed in literature. [formerly PHLB26; not open to students who have taken that course] [*Course not offered in 1970-71*]
Fall Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None

HLB61H Contemporary Moral Issues
A study of principles and arguments advanced in discussion of such current issues as civil disobedience, sexual morality, punishment versus therapy, censorship, the legal enforcement of morals, birth control, and drugs. [*Course not offered in 1970-71*]
Half Year Course/Prerequisites: None/*Corequisites:* None

HLB62S History of Ethics
A study of selected classics. [formerly PHLB03; not open to students who have taken that course]
Spring Term/Prerequisites: One course in Philosophy, PHLB51F or PHLB51S, is recommended./*Corequisites:* None
Instructor: Sobel

LB63S Inductive Logic
A study of such topics as the nature of inductive inference, the problem of induction, and probability. [formerly PHLB32; not open to students who have taken that course]
Spring Course/Prerequisites: One course in Philosophy, PHLB53F and PHLB54F are recommended./*Corequisites:* None

LB64S Logic, Second Course
Properties of logical theories: consistency and completeness. An extension of quantification theory to include many-place predicates, identity, and descriptions. [formerly PHLC31; not open to students who have taken that course]
Spring Course/Prerequisites: PHLA01Y or PHLB53F
Corequisites: None
Instructor: Sobel

LB65F Greek Philosophy: Plato and his Predecessors
[formerly PHLB11; not open to students who have taken that course]
Fall Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None
Instructor: Gooch

LB66S Greek Philosophy: Aristotle and later Greek Philosophy
[formerly PHLB11; not open to students who have taken that course]
Spring Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None
Instructor: Gooch

PHLB67S **Mediaeval Philosophy**

The philosophies of Augustine, Aquinas, Ockham, and others. [formerly PHLB12; not open to students who have taken that course]

Spring Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None

Instructor: Mosher

PHLB69F **Rationalism**

The philosophies of Descartes, Spinoza, and Leibniz.

[formerly PHLB13; not open to students who have taken that course]

Fall Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None

Instructor: Mosher

PHLB70S **British Empiricism**

The philosophies of Locke, Berkeley, and Hume. [formerly PHLB14; not open to students who have taken that course] [*Course not offered in 1970-71*]

Spring Course/Prerequisites: [A previous term in Philosophy is recommended but not required]/*Corequisites:* None

PHLC52F **Nineteenth-century Philosophy**

German idealism and reactions to it: philosophies of irrationalism, positivism, empiricism, and pragmatism. [formerly PHLB16; not open to students who have taken that course]

Fall Course/Prerequisites: One of PHLB54F, PHLB55F, PHLB65F, PHLB66S, PHLB67S, PHLB69F, PHLB70S/*Corequisites:* None

Instructor: Hartman

PHLC53S **Twentieth-century Philosophy**

Philosophers such as Russell, Moore, Wittgenstein, Dewey, and others. [formerly PHLB17; not open to students who have taken that course]

Spring Course/Prerequisites: One course from PHLB53F, PHLB54F, PHLB65F, PHLB66S, PHLB67S, PHLB69F and PHLB70S

Corequisites: None

PHLC54S **Existentialism and Phenomenology**

Philosophers such as Kierkegaard, Husserl, Jaspers, Heidegger, Sartre, and others. [formerly PHLB18; not open to students who have taken that course]

Spring Course/Prerequisites: One B level course in Philosophy

Corequisites: None

PHLC55H **Dialectical Materialism**

The philosophies of Marx, Engel, Lenin, and others. [*Course not offered in 1970-71*]

Half Year Course/Prerequisites: One B level course in Philosophy. PHLB52F is recommended/*Corequisites:* None

LC60S Contemporary Ethics

Fundamental concepts and theories of morals: intuitionism, emotivism, utilitarianism, and others. [formerly PHLB02; not open to students who have taken that course]

Spring Course/Prerequisites: One B level course in Philosophy, PHLB51F, PHLB54F, PHLB70S are recommended

Corequisites: None

Instructor: Miller

LC62H Legal Philosophy

A study of such topics as the nature of law, the obligation to obey it, law and morality, and the judge's decision. [*Course not offered in 1970-71*]

Half Year Course/Prerequisites: One B level course in Philosophy, PHLB51F or PHLB51S and PHLB52F are recommended

Corequisites: None

LC65S Theories of Mind

A study of such topics as the nature of mind, the relation of mind to body, knowledge of other minds, and minds and machines. [formerly PHLB24; not open to students who have taken that course]

Spring Course/Prerequisites: One B level course in Philosophy, PHLB54F or PHLB55F are recommended/*Corequisites:* None

C66S Philosophy of Language

Contemporary theories of meaning, reference, and language. [formerly PHLB35; not open to students who have taken that course]

Spring Course/Prerequisites: One B level course in Philosophy, PHLB53F, PHLB54F, PHLB55F are recommended.

Corequisites: None

Instructor: Graham

C67H Perception

A study of theories of perception and arguments used to support them. [*Course not offered in 1970-71*]

Half Year Course/Prerequisites: One B level course in Philosophy, PHLB54F is recommended/*Corequisites:* None

C72H Set Theory

An introduction to axiomatic set theory: sets, numbers, relations, and functions. [*Course not offered in 1970-71*]

Half Year Course/Prerequisites: PHLB64S/*Corequisites:* None

C73H Philosophy of Mathematics

The axiomatic development of systems of numbers and the foundational approaches of Russell, Hilbert, and Brower. [*Course not offered in 1970-71*]

Half Year Course/Prerequisites: One course in logic, PHLC72H is recommended/*Corequisites:* None

PHLC74H **Philosophy of Science**
A study of explanation, confirmation, and theory in the sciences. [*Course not offered in 1970-71*]
Half Year Course/Prerequisites: One B level course in Philosophy, PHLB53F and PHLB54F are recommended/*Corequisites:* None

Physics

Physics has as its objective the analysis and understanding of matter from the microscopic scale of the atomic nucleus to the scale of the universe itself. In this study some factual knowledge is necessary, but equally important is an ability to analyze physical situations so as to determine what ingredients are essential and what can be neglected. This is reflected in studies at the university level, where the emphasis is on such analysis, in order that the student develop an ability to use his factual knowledge.
The student of Physics must also study Mathematics because Mathematics is a necessary tool in the study of Physics, but Physics is not just applied Mathematics. Because modern science is based on experiment, laboratory work is essential in connection with Physics courses.
Students intending to specialize in Physics should register in the first year in PHYA01Y, MATA40F, MATA45S, and MATA55Y. Programmes after the first year should be worked out individually in consultation with one of the Physics faculty and the counselling service.

NSCA01Y 2L:T3F3
3P:*(every second week):* M9M10M11/ T1T2T3

PHYA01Y 2L:M11F9
3P:*(every second week):* M2M3M4/ T9T10T11

PHYA02Y 2L:M11F9
3P:*(every second week):* W9W10W11/ W2W3W4/ F10F11F12/ F2F3F4

PHYB01Y 2L:M12F1
1T:M3

PHYB02S 2L:T5F4
1T:F9

PHYB03Y 2L:T9F2
7P:*(every second week):* T10T11T12T1 T2T3T4

PHYB11Y 2L:M5F1
7P:*(every third week):* M10M11M12 M1M2M3M4

PHYB12Y 2L:F11F3

NSCA01Y **Introduction to Natural Science: The Physical Sciences**
This course has two main purposes. It provides a comprehensive introduction to science for the future teacher, lawyer, economist, government official, politician, artist, theologian, social scientist,

anthropologist, etc. It is also intended to provide an interesting view of the physical sciences for students who plan careers in the physical and life sciences. The intent of the course is to give some historical perspective, with special effort directed to the identification of the common elements and interrelationships that give pattern to the institutions called *science* and *society*. A major theme is that of systems or cybernetics, including the concepts of feedback and of stability. The probabilistic and statistical character of natural phenomena, difficulties attending measurement and understanding of natural phenomena, energy transformations and the nature of matter, philosophic and social implications of modern science, and questions of determinancy-indeterminancy constitute other themes. Laboratory work will be optional. However, students not electing the laboratory will be given additional reading and essay assignments.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: King

YA01Y Mechanics, Waves, and Thermal Physics

The motion of a single particle is dealt with extensively from the points of view of both the classical theory of Newton and the special theory of relativity of Einstein; then the treatment is extended to systems of several particles, such as molecules. Following this, systems involving large numbers of particles are studied using elementary kinetic theory and statistical mechanics. Quantum ideas are introduced. In conclusion, the microscopic world is examined in terms of the particle nature of matter. This course is fundamental to a physics programme.

Year Course/Prerequisites: Grade 13 Math A or MATA40F as a co-requisite, Grade 13 Physics/*Corequisites:* MATA55Y

Instructor: Staff

A02Y Mechanics, Matter and Waves

This course covers almost the same topics as PHYA01Y but in less depth and detail. It is recommended for students not intending to pursue major studies in Physics.

Year Course/Prerequisites: Grade 13 Math A or MATA40F as a co-requisite/*Corequisites:* MATA55Y

Instructor: Staff

B01Y Electricity and Magnetism

The fundamentals of electricity and magnetism and of electromagnetic radiation are introduced and developed. This course is essential to a physics specialist programme.

Year Course/Prerequisites: PHYA01Y or PHYA02Y, MATA55Y or MATA01Y, MATA03F or MATA40F or permission of instructor

Corequisites: MATB04F or MATB41F or permission of instructor

Instructor: O'Donnell

PHYB02S **Advanced Dynamics**

Topics covered include motion of particles in three dimensions, motion of a system of particles, rigid bodies, moving co-ordinate systems, Lagrange's equations, and rotation of rigid bodies. Planetary and satellite motion and the dynamics of rockets will be discussed. This course is essential to a physics specialist programme.

Spring Course/Prerequisites: PHYA01Y or PHYA02Y, MATB51F
Corequisites: None
Instructor: Perz

PHYB03Y **Electronics**

The physical principles of electronic devices such as vacuum tubes and semiconductor diodes and transistors are studied. Circuits incorporating these devices are described, and methods of circuit analysis are developed. (Lectures and laboratory).

Year Course/Prerequisites: PHYA01Y or PHYA02Y, MATA01Y or MATA55Y/*Corequisites:* None
Instructor: Perz

PHYB11Y **Quantum Physics**

The wave-particle duality is developed by treating such topics as de Broglie waves, the Compton effect, Rutherford scattering, and the uncertainty principle. The Schroedinger equation is introduced and applied to potential well and harmonic oscillator problems, and to one-electron atoms. Quantum numbers, degeneracy, angular momentum, magnetic moment, and spin are discussed. Multi-electron atoms are treated, with references to the periodic table. X-rays and such phenomena as pair production and the photo-electric effect are studied in detail. A treatment of nuclear properties follows, including such topics as size, mass and stability, models of the nucleus (e.g., shell model), alpha, beta, and gamma decay, and nuclear forces and reactions. (Lectures and laboratory). This course is essential to a physics specialist programme.

Year Course/Prerequisites: PHYB01Y, MATA45S, MATB04F or MATB41F or permission of instructor/*Corequisites:* MATB40F, MATB50F or permission of instructor.
Instructor: Soots

PHYB12Y **Thermal Physics**

This course is devoted to the interpretation of the properties of solids, liquids, and gases in terms of their elemental constituents, namely atoms and molecules. Thus, it serves as an introduction to the subjects of statistical mechanics, the kinetic theory of gases, and thermodynamics.

The student who vigorously pursues his study of this subject will, by the end of the year, have distinguished himself from the man in the street in that he will have acquired an understanding of the concept of entropy.

This course is essential to a physics specialist programme.
Year Course/Prerequisites: PHYB01Y, MATA45S, MATB04F or MATB41F or permission of instructor/*Corequisites:* MATB50F
Instructor: Walker

Political Science

SOSA01F	2L:W10R10 1T:M9/M10/R3	POLB03Y	2L:W3W4
POLA01Y	2L:M9T11 1T:M1/W11	POLB06Y	2L:T10R10
POLA02Y	2L:M2R3 1T:W11/R11	POLB10Y	2L:T2T3 1T:T10/W10/R11/ F9
POLB02F	2L:M4M5	POLB12Y	2L:M10W10
		POLC01Y	2T:T4T5

SA01F Quantitative Methods in Social Sciences
This course is designed to introduce students to the basic statistical techniques used in the Social Sciences. Students who plan programmes in Economics, Geography or Political Science are encouraged to take this course.
Fall Course/Prerequisites: None/*Corequisites:* None

A01Y Government of Canada
A study of the political process in Canada, including Canadian political culture, the formation of public opinion, political behaviour, political parties, the constitution, federalism, French Canada, federal-provincial financial relations, and the structure and functioning of political institutions, such as the cabinet, parliament, the judiciary, and the public service.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Blair

A02Y Introduction to Political Science
This course will present an overview of the major field of study in political science, including political theory. It will also deal with methodological problems in the discipline.
Year Course/Prerequisites: None/*Corequisites:* None

B02F Workshop in Canadian Politics
This will be a one-term seminar. The emphasis will be upon the character and functioning of Canadian political parties.
Fall Course/Prerequisites: POLA01Y/*Corequisites:* None
Instructor: Blair

B03Y Modern Political Thought
A study of the development of political theory since the French Revolution.
This will include an examination of the theories of Marx, Lenin,

Spenser, Nietzsche, among others.
Year Course/Prerequisites: None/*Corequisites:* None

LB06Y Political Thought from Plato to the French Revolution
This course will include a discussion of the political thought of Plato, Aristotle, some of the mediaeval political thinkers, Hobbes, Locke, and Rousseau.
Year Course/Prerequisites: None/*Corequisites:* None

LB10Y International Relations
This is an introduction to the political relations among states. The course places special emphasis on the issues of war and peace, other international political behaviour and the international institutions created to deal with problems relating to the conduct of international relations.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Bishop

LB12Y Politics and Government of Africa
An examination of the problems of government in societies at an early stage of economic development.
The focus will be on Africa but analogies will be drawn from the experience of other countries in the "Third World".
Year Course/Prerequisites: None/*Corequisites:* None

LC01Y Comparative Federalism
This seminar will deal with the theory, history, and practice of federal systems of government. The main emphasis in the course will be upon the manner in which contemporary federal systems deal with a number of fundamental problems, such as linguistic and ethnic differences, economic disparities, and financial relations. *Enrolment limited to 12.*
Year Course/Prerequisites: Permission of instructor/*Corequisites:* None
Instructor: Blair

Psychology

PSYA01Y	3L:M9T11R10/ T9W10R9	PSYB50F	3L:M12T11W2
PSYB07F	3L:T1W9R2	PSYB51S	1L:T3 1T:W1 3P:W2W3W4
PSYB08S	2L:T1W9 1T:R2	PSYB60F	3L:M10T2R12
PSYB09F	1L:T4 1T:F9 3P:M10M11M12/ F10F11F12	PSYB61S	1L:T4 1T:F9 3P:M10M11M12
		PSYB70F	3L:M2R10F10

PSYB09S	1L:W9 1T:R2 3P:T2T3T4
PSYB10F	3L:M11W12R1 1T:M1/T9/W10
PSYB10S	3L:M3T12R1 1T:M1/T9/W10
PSYB11F	1L:T3 1T:W1 3P:W2W3W4
PSYB20F	3L:M3T12R11
PSYB30F	3L:T10W11F1
PSYB30S	3L:M11W12R12
PSYB32S	3L:T10W11F1
PSYB40F	3L:M9W5R9
PSYB41S	2L:T4F9 3P:F10F11F12
PSYC12S	2L:M1R4
PSYC20S	2L:T12R11
PSYC32F	2L:M1R4
PSYC42S	2L:M9R9
PSYC50S	2L:M12T11
PSYC62S	2L:M3T2
PSYC72S	2L:R10F10
PSYC90F	*Arrange with Instructor*
PSYC90S	*Arrange with Instructor*
PSYC92F	*Arrange with Instructor*
PSYC92S	*Arrange with Instructor*

Psychology is that branch of science which seeks to understand the behaviour of organisms, both human and infrahuman, normal and abnormal. Psychology accepts the individual organism rather than the collective or group as the unit of analysis. It attempts to determine how organisms perceive, how they develop and change over the course of their life histories, how they choose among alternative courses of action and, particularly with humans, how they relate to their fellows and to social institutions. The courses in this discipline are designed to further an awareness of the fundamental principles of psychology, its research findings, and the means by which psychological knowledge is acquired. The emphasis, thus, is upon scientific inquiry, rather than upon the development of service skills.

PSYA01Y **Introduction to Psychology**

A consideration of the basic principles and methods of contemporary Psychology, emphasising their contributions to an understanding of how organisms, both human and infrahuman, perceive their environments, how their behaviour is modified by experience, and how their activities are instigated, sustained, and directed.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Staff

PSYB07F **Statistics**

An examination of statistical decision procedures with particular attention to their role in the description of research data, in the drawing of reasonable inferences from experimental findings, and in the prediction of future outcomes.

Fall Course/Prerequisites: None/*Corequisites:* None

YB08S Experimental Design

The application of analysis of variance techniques to research data.

Spring Course/Prerequisites: PSYB07F/*Corequisites:* None

YB09F
YB09S General Experimental Psychology

The experimental techniques of Psychology as applied to problems of learning, motivation, and perception in human and infrahuman organisms. Prior or concurrent enrolment in PSYB07F is recommended.

Fall and Spring Course/Prerequisites: PSYA01Y/*Corequisites:* None

YB10F
YB10S Social Psychology

A survey of contemporary areas of research in social Psychology. The behaviour of man as influenced by others in his environment. Includes: person perception, attitude change, conformity, status, leadership, prejudice, co-operation and competition. [formerly a portion of PSYB01Y; not open to students who have taken that course]

Fall and Spring Course/Prerequisites: PSYA01Y/*Corequisites:* None

B11F Social Psychology Lab

Students will be expected to conduct social psychological experiments in the laboratory and in the field. There will be class projects and individual projects.

Fall Course/Prerequisites: PSYB10F or PSYB10S/*Corequisites:* None

B20F Developmental Psychology

Study of the changing psychological processes of the growing individual. Emphasis is given to the effects of early experiences of the immature organism on social behaviour. [formerly a portion of PSYB02Y; not open to students who have taken that course]

Fall Course/Prerequisites: PSYA01Y/*Corequisites:* None

330F
330S Personality

How psychologists study the individual and his behaviour. Examples of both the traditional broad theories of behaviour (e.g. Freud's psychoanalytic theory) and the more contemporary research oriented "miniature theories" will be discussed. Research topics will include achievement motivation, manifest anxiety, and intelligence. [formerly a portion of PSYB03Y; not open to students who have taken that course]

Fall and Spring Course/Prerequisites: PSYA01Y/*Corequisites:* None

332S Abnormal Psychology

An examination of the nature and varieties of abnormal behaviour. Relevant theories and research will be discussed.

Spring Course/Prerequisites: PSYA01Y and another half course in Psychology/*Corequisites:* None

PSYB40F **Learning**

An intensive study of the principles underlying the environmental control of behaviour. [formerly a portion of PSYB04Y; not open to students who have taken that course]

Fall Course/Prerequisites: PSYA01Y/*Corequisites:* None

PSYB41S **Learning Laboratory**

Laboratory exercises focus on the acquisition and extinction of responses, discrimination, generalization, and the effects of schedules of reinforcement. Prior or concurrent enrolment in PSYB07F is recommended. [formerly a portion of PSYB04Y; not open to students who have taken that course]

Spring Course/Prerequisites: PSYB09F or PSYB09S and PSYB40F
Corequisites: None

PSYB50F **Sensation and Perception**

A detailed exploration of man's information-processing capabilities including consideration of the psychological mechanisms underlying the detection, quantification, interpretation, storage, and utilisation of sensory information. [formerly a portion of PSYB05Y; not open to students who have taken that course]

Fall Course/Prerequisites: PSYA01Y/*Corequisites:* None

PSYB51S **Sensation and Perception Lab**

Basic principles of information processing illustrated in laboratory exercises. Prior or concurrent enrolment in PSYB07F is recommended. [formerly a portion of PSYB05Y; not open to students who have taken that course]

Spring Course/Prerequisites: PSYB09F or PSYB09S, PSYB50F
Corequisites: None

PSYB60F **Physiological Psychology**

The structure and function of the nervous system as related to the study of behaviour. [formerly a portion of PSYB06Y; not open to students who have taken that course]

Fall Course/Prerequisites: PSYA01Y/*Corequisites:* None

PSYB61S **Physiological Psychology Lab**

The methods of physiological psychology and their application to an understanding of the biological foundations of behaviour. [formerly a portion of PSYB06Y; not open to students who have taken that course]

Spring Course/Prerequisites: PSYB09F or PSYB09S, PSYB60F
Corequisites: None

YB70F **Comparative Psychology**
Comparison of psychological and ethological approaches to the problems of the structure, causation, ontogeny, and phylogeny of behaviour.
Fall Course/Prerequisites: PSYA01Y/*Corequisites:* None

YC12S **Current Topics in Social Psychology**
Review of current research in special areas.
Spring Course/Prerequisites: PSYB01Y or PSYB10F or PSYB10S
Corequisites: None

YC20S **Cognitive Development**
Learning, problem-solving, thinking, concept formation, with strong accent on Piaget's theory of cognitive development.
Spring Course/Prerequisites: PSYB02Y or PSYB20F
Corequisites: None

YC32F **Current Topics in Personality**
Review of current research in special areas.
Fall Course/Prerequisites: PSYB03Y or PSYB30F or PSYB30S
Corequisites: None

YC42S **Current Topics in Learning**
An intensive examination of recent empirical findings having implications for the understanding of the learning process.
Spring Course/Prerequisites: PSYB04Y or PSYB40F
Corequisites: None

C50S **Information Processing Behaviour**
Review of current research in special areas.
Spring Course/Prerequisites: PSYB05Y or PSYB51S
Corequisites: None

C62S **Current Topics in Physiological Psychology**
A review of contemporary issues in physiological psychology.
Spring Course/Prerequisites: PSYB60F/*Corequisites:* None

C72S **Current Topics in Comparative Psychology**
Review of current research in special areas.
Spring Course/Prerequisites: PSYB70F/*Corequisites:* None

C90F **Supervised Readings in Psychology**
C90S An independent study course designed to permit intensive examination of the literature on a selected topic. Supervision of the programme of reading is arranged by mutual agreement between the student and an interested instructor.
Fall or Spring Course/Prerequisites: 3 courses in Psychology and permission of instructor/*Corequisites:* None
Instructor: Staff

PSYC92F **Supervised Research in Psychology**
PSYC92S An independent study course designed to permit the exploration in the laboratory or in the field of a selected problem in Psychology. Supervision of the programme of research is arranged by mutual agreement between the student and an interested instructor.
Fall or Spring Course/Prerequisites: PSYB07F and PSYB09F or PSYB09S and 2 additional courses in Psychology and permission of instructor/*Corequisites:* None
Instructor: Staff

Russian

RUS001Y	4L:M11M1W2F11 1P:F1	RUSA01Y	1L:F12
RUS002Y	3L:M12W1R2 1P:M4	RUSB11Y	2L:W12W3
RUS003Y	3L:T2W4R4	RUSB12Y	2L:T3T4
		RUSB21Y	2L:T12R12
		RUSB23F	2L:M10W10

RUS001Y **Elementary Russian**
Study of grammar, intensive reading, composition and laboratory practice.
Year Course/Prerequisites: None/*Corequisites:* None

RUS002Y **Intermediate Russian**
Continued study of Russian with oral practice, composition and translation. Conversation based on literary texts and topics of current interest.
Year Course/Prerequisites: RUS001Y/*Corequisites:* None

RUS003Y **Advanced Russian**
Study of morphology and syntax. Intensive and extensive reading. Free composition, translation from English to Russian and vice versa, and oral practice.
Year Course/Prerequisites: RUS002Y/*Corequisites:* None

RUSA01Y **Introduction to Russian Culture and Literature**
Russian thought, society and literature; intellectual and social evolution as reflected in Russia's artistic creations: 18th century to the present.
Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Ponomareff

RUSB11Y **19th Century Russian Literature**
Specialists will be required to do some reading in the original.
Year Course/Prerequisites: None/*Corequisites:* None

SB12Y Russian Drama

Survey of the Russian theatre from its origins to the present. Readings in translation of the works of Griboedov, Pushkin, Gogol, Ostrovsky, Chekhov, Mayakovsky, and others. Specialists will be required to do a certain amount of reading in the original.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Zelonka

SB21Y Twentieth Century Russian Literature

A survey of pre- and post-revolutionary Russian literature (with excursions into Russian emigré literature). Stress on literary analysis, continuity and influence. Exploring problems of creative process and freedom, artistic dilemma and achievement under political pressure. Lectures and discussion groups, oral reports and one essay. Specialists will be required to do a certain amount of reading in the original.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Ponomareff

SB23F Soviet-Russian Underground Literature

A study of literary revolution, the nature of its divergence and the implicit profile of official Soviet mentality and ideology that the literary dilemma suggests.

Fall Course/Prerequisites: None/*Corequisites:* None

Instructor: Ponomareff

C01Y Twentieth Century Russian Poetry

Study of poetry including pre-revolutionary Soviet and emigré poets: Blok, Gumilev, Mayakovsky, Esenin, Pasternak, Tsvetaeva, Tvardovsky, Yashin, Slutsky, Zabolotsky, Akhmadulina, Voznesensky, Evtushenko, G. Ivanov, Klenovsky.

Studies in poetic perception. Lectures and discussion groups. Oral reports and one essay. [*Course not offered in 1970-71*]

Year Course/Prerequisites: RUS003Y/*Corequisites:* None

Instructor: Ponomareff

Sociology

SOCA01Y	3L:T10W11W5	SOCB13Y	2L:T11R2 1T:F9/F11
SOCA02Y	2L:T12W12 1T:M11/M4	SOCB18Y	2L:W3F3 1T:W4/F12/F2
SOCA03Y	2L:T5R5 1T:M10/M1/M2/M5	SOCB20Y	2L:M11W11 1T:R9/R1/R5
SOCB01Y	2L:M2W2 2P:M3M4/W3W4	SOCB25S	2L: T9R11 1T:F10/F12
SOCB02Y	2L:T2W1 1T:T5/W5	SOCC01F	2L:F10F11 1T:M12

SOCB03Y	2L:T10T1 1T:T2	SOCC02S	2L:F10F11 1T:M12
SOCB05Y	2L:W10R9 2P:R10R11/R4R5	SOCC03F	2L:R4R5 1T:T12
SOCB10Y	2L:T5W5 1T:W9/F9	SOCC04S	2L:R4R5 1T:T12
SOCB12Y	2L:M4W4 1T:R12/R2/R3/F4	SOCC10Y	2L:T3T4 1T:R3

SOCA01Y **Introduction to Sociology**

An introduction to the basic concepts, principles and methods of Sociology as a discipline for the study of society. Major topics studied include the nature of social groups, social processes, culture, social structure, socialization, deviant behaviour, population, community, stratification, social institutions and social change.

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Gerson

SOCA02Y **Contemporary Society**

An examination of contemporary society through the use of basic principles and methods of Sociology. This course will emphasise a particular and crucial substantive aspect of contemporary society. [May not be taken in same degree programme as SOCA03Y]

Year Course/Prerequisites: None/*Corequisites:* None

Instructor: Lee

SOCA03Y **Social Problems**

A problems approach to Sociology with emphasis on major problems in Canadian society. [May not be taken in same degree programme as SOCA02Y]

Year Course/Prerequisites: None/*Corequisites:* None

SOCB01Y **Methods of Social Research**

Course aims include both a formal study of methodology and a practical introduction to social research design, data collection and analysis. Laboratory sessions include exercises in computer programming, elementary statistics, graphics and library research. Students design and execute suitable projects as an important part of their term work.

Year Course/Prerequisites: One previous course in Sociology
Corequisites: None

SOCB02Y **Structure of Inter-Personal Relations**

The study of patterned relationships, social roles and social expectations which arise out of interactions among individuals.

Year Course/Prerequisites: One previous course in Sociology
Corequisites: None

CB03Y History of Social Thought

This course is concerned with the development of Sociology and with the works of particular sociologists whose concepts not only have historical interest but also have relevance to contemporary sociology.

Year Course/Prerequisites: One previous course in Sociology
Corequisites: None
Instructor: O'Toole

CB04Y Political Sociology

Political Sociology is the study of the interrelationship between society and polity, between social structures and political institutions. The first part of the course deals with the literature of political sociology from Marx to the present; the latter part of the course with with the Canadian polity in particular. [*Course not offered in 1970-71*]

Year Course/Prerequisites: Permission of Division
Corequisites: None

CB05Y Urban Sociology

Examines the city both as a significant development in world civilization and as a working mechanism guided by contemporary policies and studies human behaviour in its multifaceted relations with the urban environment. [Offered in Extension only]

Year Course/Prerequisites: One previous course in Sociology
Corequisites: None

B10Y Social Stratification

Description and analysis of the nature of social stratification, with emphasis on the basis of stratification, different theoretical views concerning stratification, the structure and function of stratification systems, social classes and associated behaviour, social mobility and class conflict.

Year Course/Prerequisites: One previous course in Sociology
Corequisites: None

B12Y Sociology of the Family

The sociological study of the family in contemporary western society, with special emphasis on its historical development, social forces which have influenced it, interrelationship with other institutional forms, the family as a small group, the family life cycle, family disorganization and family change.

Year Course/Prerequisites: One previous course in Sociology
Corequisites: None

B13Y Canadian Society

A sociological analysis of Canadian society, with emphasis on its changing structure.

Year Course/Prerequisites: One previous course in Sociology

Corequisites: None
Instructor: Hanna

SOCB18Y **Deviant Behaviour**
A sociological analysis of various forms of deviant behaviour, including an examination of causal theories, social definitions, maintenance, control and social consequence.
Year Course/Prerequisites: One previous course in Sociology
Corequisites: None
Instructor: Gerson

SOCB20Y **Social Perception: Race and Ethnic Relations**
A consideration of the relevance of theories of social perception to the analysis of relations between racial and ethnic groups.
Year Course/Prerequisites: One previous course in Sociology
Corequisites: None

SOCB25S **Politics and Society in the U.S.S.R.**
An introduction to Soviet politics and society, with emphasis on the impact of revolution and rapid industrialization upon politics and social relations.
Spring Course/Prerequisites: One previous course in Sociology or consent of instructor/*Corequisites:* None

SOCC01F **Small Groups**
A sociological analysis of small group behaviour with special reference to formation, structure, maintenance patterns and change.
Fall Course/Prerequisites: Two previous courses in Sociology
Corequisites: None

SOCC02S **Complex Organization**
The study of large-scale organization, with special reference to bureaucracy.
Spring Course/Prerequisites: Two previous courses in Sociology
Corequisites: None

SOCC03F **Collective Behaviour**
This course is concerned with the social conditions that produce collective behaviour and the effect it has on group conflict, morale, consensus and changing patterns of social organization.
Fall Course/Prerequisites: Two previous courses in Sociology
Corequisites: None
Instructor: O'Toole

SOCC04S **Social Movements**
Analysis of major social movements, their origins, dynamics, and consequences for contemporary society.

Spring Course/Prerequisites: Two previous courses in Sociology
Corequisites: None
Instructor: O'Toole

CC10Y Selected Problems in Political Sociology

After a rapid survey of basic concepts and tools, the inquiry will focus upon such problems as: elites in politics (including the military, scientists, and intellectuals); masses in non-democratic politics; politics in polyethnic societies; social criticism and political deviance; social movements, violence, and revolution. Emphasis will be placed upon the politics of authoritarian and pre-industrial states.

Year Course/Prerequisites: At least two B level courses in Sociology or Political Science, or consent of instructor/*Corequisites:* None

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Spanish

SPA001Y	3L:M2W2F3/ M4W1R4/ M2W9F1/ T9W12F12 2P:M9M10/W9W10/ W11W12/F11F12
SPA002F	3L:M3W1F1
SPA003S	3L:M10W2F2
SPA004F	1L:W3 2P:M11F10
SPA005F	2L:M10W2F2/ M12W12T4 1P:M2
SPA006S	2L:T2T3 1T:R2
SPA007S	3L:M3W1F1
SPAB11Y	3L:M1W9F9
SPAB12S	3L:M2W12F10
SPAB13F	3L:M2W12F10
SPAB14S	*Extension*
SPAB21S	3L:M3W9F1
SPAB22F	3L:M11W4F1
SPAB24F	3L:T9W1F12
SPAB26S	3L:T9W1F12
SPAB28F	3L:T10W10F3
SPAB30S	3L:T10W10F3

There are certain courses given in other areas which may prove directly valuable to the student as adjuncts to his plan of studies, or may be of interest as an enrichment of his total programme. We strongly suggest that each student read in detail the course listings of special interest to him in other areas, and seek personal academic counselling from his instructors so as to receive maximum value and satisfaction from his studies here at Scarborough College.

001Y Introductory Spanish

A course in basic grammer and syntax. Instruction in spoken and written Spanish and rapid comprehension of idiomatic speech with the aid of a co-ordinated laboratory programme.

Year Course/Prerequisites: None/*Corequisites:* None
Instructor: Chicoy

SPA002F **Intermediate Spanish**
Review of Spanish grammar and syntax. Elementary composition.
Fall Course/Prerequisites: SPA001Y or Grade XIII/*Corequisites:* None
Instructor: Maillard

SPA003S **Pre-Literary Examination of Texts**
Preparation in the basic elements of Spanish stylistics and in the rapid reading and comprehension of texts of various periods and subject matter.
Spring Course/Prerequisites: SPA002F/*Corequisites:* None
Instructor: Barta

SPA004F **Phonetics**
Principles of articulatory phonetics; fundamentals of Spanish speech sounds; intensive practice in their pronunciation and transcription.
Fall Course/Prerequisites: SPA001Y/*Corequisites:* SPA002F
Instructor: Skyrme

SPA005F **Intermediate Conversation**
This course is designed to give the student intensive practice in spoken language through controlled situational oral practice, discussion groups and the passive comprehension of the speech of major Spanish linguistic areas.
Fall Course/Prerequisites: SPA001Y/*Corequisites:* None

SPA006S **Advanced Conversation**
This course is designed to continue on a more advanced level the intensive practice in spoken Spanish begun in SPA005F.
Spring Course/Prerequisites: SPA005F/*Corequisites:* None

SPA007S **Intermediate Syntax and Composition**
This course is designed to give the student intensive practice in effective writing and a reasonable degree of naturalness in the use of idiomatic Spanish.
Spring Course/Prerequisites: SPA002F/*Corequisites:* None
Instructor: Maillard

SPAB11Y **Survey of Spanish Literature**
Reading, analysis and discussion of Peninsular Spanish literature from the Twelfth to the Twentieth Centuries, with the object of acquainting the student with the major literary movements of each period, the authors and their works.
Year Course/Prerequisites: SPA003S/*Corequisites:* None
Instructor: Barta

SPAB12S **History of the Spanish Language**
The Pre-Roman, Roman, Visigothic and Moorish civilizations in Spain; the growth of the Spanish language from Latin; the evolution

of its phonology, morphology, syntax and vocabulary.
Spring Course/Prerequisites: SPA004F/*Corequisites:* None
Instructor: Skyrme

'AB13F Romanticism
The origin and growth of the Romantic movement in Spain; its relationship to Neo-Classicism and the Spanish tradition; a detailed study of the works of its principal exponents.
Fall Course/Prerequisites: SPA001Y or permission of instructor
Corequisites: SPA002F
Instructor: Skyrme

AB14S Modern Hispanic Literature. Modernismo.
This course concerns the relationship of the Spanish-American *Modernista* poets to the French Parnassians and Symbolists which will be studied through the comparative analysis of representative texts.
Spring Course/Prerequisites: SPA002F/*Corequisites:* SPA003S or permission of instructor
Instructor: Skyrme

AB21S Stylistics and Translation
The examination of Spanish literature in relation to the resources of the language. Theory and practice of transmission of literary material from one language to another.
Spring Course/Prerequisites: SPA003S/*Corequisites:* None
Instructor: Barta

AB22F Mediaeval Literature
Reading, analysis and discussion of major texts in prose and poetry from the Twelfth to the Fifteenth Centuries in Spain.
Fall Course/Prerequisites: SPA003S/*Corequisites:* SPAB11Y
Instructor: Barta

B24F Golden Age Drama
Study of the development of the Spanish drama from the Middle Ages to the Golden Age. Reading, analysis and discussion of major texts.
Fall Course/Prerequisites: SPA003S or permission of instructor
Corequisites: SPAB11Y
Instructor: León

B26S Golden Age Poetry
Study of the major poets of the Golden Age from Garcilaso to Góngora.
Spring Course/Prerequisites: SPA003S or permission of instructor
Corequisites: SPAB11Y
Instructor: León

SPAB28F **Spanish American Literature: A Survey**

Study of the main currents of Spanish American literature from colonial times to 1850. Special attention will be paid to the fundamental economic, social and cultural factors of the periods under consideration. Reading, analysis and discussion of selected texts.

Fall Course/Prerequisites: SPA003S or permission of instructor

Corequisites: SPAB11Y

Instructor: León

SPAB30S **Spanish American Literature: The Novel of the Mexican Revolution**

A study of the various types of novels written in Mexico from 1910 to the present time. Attention will be paid to the fundamental economic, social and cultural aspects of the Revolution.

Spring Course/Prerequisites: SPA003S or permission of instructor

Corequisites: SPAB11Y

Instructor: León

THE FACULTY OF ARTS AND SCIENCE AT SCARBOROUGH COLLEGE

courses in extension

There were Extension students studying in Scarborough College months before any day students arrived here. And it is true to say that the Extension programme at the College is accorded by all a position of especial importance. All courses offered to Extension students are, of course, offered under the auspices of the Faculty of Arts and Science of the University of Toronto, and most Extension students make use of their special status by taking degree programmes involving courses offered both on the St. George and Scarborough campuses. The administration of the Extension programme at Scarborough College is handled entirely by the College, and it has always been our aim to make Extension students feel that they are as much a part of the College as any other student. All facilities of the College are available to Extension students—the Library, the athletic facilities, the cafeterias, and in addition to this, they are of course free to make full use of the academic counselling programmes.

Each year the Extension programme is getting larger and more sophisticated. Not only are there more than forty courses offered in Extension in the Winter session 1970-71, but some of them are not otherwise available to day students. Therefore some day students will be studying in those courses, and similarly Extension students are invited, should they wish, to discuss their possible registration in courses offered in the daytime.

Facilities

The College parking lots are open, free of charge, to Extension students.

Information concerning the Library is to be found in the appropriate section of this Calendar.

The Bookstore remains open at certain times for Extension students. In the Summer Evening session, it opens until 9 p.m. Monday through Thursday for the first two weeks of the session. Thereafter, it opens until 9 p.m. on Monday and Thursday of each week of the Summer Evening session. In the Winter Evening session, the Bookstore remains open until 9 p.m. Monday through Thursday for the first three weeks of classes. Thereafter, this arrangement is continued for one week of each month. Students should watch the notice-board inside the main entrance of the College for exact dates.

The Cafeteria remains open until 9:30 p.m. Monday through Thursday each week of the Winter Evening Session. Arrangements for the Summer Evening session will be announced separately.

Application, Admission and Registration

Full details of the University of Toronto Undergraduate Admission requirements and application procedures are contained in the *Undergraduate Admission Handbook, 1970-71* (for students presenting Canadian qualifications) and the *Undergraduate Admission Bulletin 1970-71* (for students presenting qualifications other than Canadian). Copies of both booklets are available on request from the Director of Admissions, Simcoe Hall, University of Toronto, Toronto 181, to whom all

enquiries concerning admission to part-time studies should be directed. The standard required for admission to part-time studies is the same as for admission to a full-time degree programme.

Application Procedures
Applicants for admission to Extension Degree Programmes should write to the Office of Admissions, at the address given in the above paragraph, stating their academic qualifications and interest in enrolling in a part-time degree programme.

General Admission Requirements
Candidates for admission to an undergraduate degree programme will be required to offer standing in at least four Ontario Grade 13 subjects comprising at least seven credits, or a programme of equivalent standing from another educational system. (The Office of Admissions will answer all enquiries relating to equivalent certificates.) Possession of the minimum requirements does not ensure selection.

Mature Students
Applicants who are 25 years of age, who have been residents of Ontario for at least one year, who have a sound academic record and who have at least 66% in at least one Grade 13 subject, or its academic equivalent, and obtain standing in such other tests as may be required, will be considered for admission to the University as Mature Students. (For the Mature Student Degree Regulations, see the section of this Calendar entitled "Academic Regulations".) If a candidate is intending to start upon his degree programme in the Summer Evening Session 1970 and is applying as a Mature Student, the date by which the age of 25 years must have been attained is July 15, 1970. For candidates intending to start in the Winter Evening Session 1970, the age of 25 years must have been attained by October 1 1970.

English Facility Requirements
Candidates whose mother tongue is not English may be required to meet an appropriate standard in a recognized test of English Facility such as the University of Michigan English Language Test. Details and information about this and other tests, and this admission requirement, should be obtained from the Office of Admissions, University of Toronto.

Summary of Application Dates
1 April 1970: Last day for receipt of applications for the Summer Evening Extension Session 1970.
1 August 1970: Last day for receipt of applications for the Winter Evening Extension Session 1970-71.
1 April 1971: Last day for receipt of applications for the Summer Evening Extension Session 1971.

Registration
It is important to appreciate the difference between Admission and Registration. A student is admitted to the University of Toronto, and becomes a member of the University student body. He then registers by

enrolling in the course(s) which he wishes to take in any session. Admission is a "once-only" operation. Registration is repeated prior to the start of every session and thus a student must register separately for each course that he wishes to take.

To show that a student has been admitted, he receives a Letter of Admission signed by the Director of Admissions. With his Letter of Admission, he is sent a Registration Form. If the student is currently enrolled in the Division of University Extension, he will receive a Registration Form for the next session in the mail. On this form, the student specifies the course(s) in which he wishes to enrol and the campus where these courses are being given. An extension student may take courses on more than one campus during the same session. The Registration Form, when completed, should be mailed to the Office of the Comptroller, together with fees for the courses to be taken. Registration for Extension students does not take place in person.

Fees

The cost of each full year course is $95.

The cost of each half-year course is $47.50.

In addition, each student pays $2.00 per session to the Association of Part-Time Undergraduate Degree Students (A.P.U.D.S.) for the maintenance and furtherance of the services provided for Extension Students by their own Association. Course fees and the Student Activity Fee are paid in full before each session. Cheques and Money Orders should be made payable to the University of Toronto at par, Toronto.

A.T.L. Cards

To show that his registration has been accepted, each student will receive, in the mail, his Admit-to-Lectures Card, from the Registrar's Office at Scarborough College. Apart from the name and address of the student, this card shows the courses being taken. Any change in the information on this card should be reported immediately to the Registrar's Office at Scarborough College.

Summary of Registration Dates

Summer Evening Session 1970 & 1971	*Winter Evening Session 1970-71*	
May 1	September 10	Last day for acceptance of registration forms without late fee. After these dates, a late fee of $10.00 is charged, until May 8 or September 18 as appropriate.
May 8	September 18	Last day for acceptance of registration forms with $10.00 late fee. After these dates a late fee of $20.00 is charged, until May 15 or September 30 as appropriate.

May 15	September 30	Last day for acceptance of registration forms with $20.00 late fee. After these dates registration for the respective sessions is not permitted.

Course Changes and Withdrawals
Should a student find it necessary to change his course(s) or withdraw at any stage, he should advise the Registrar's Office at Scarborough College, in writing. Students should consult the Academic Calendar at the beginning of this book to ascertain the date by which such adjustment may be made without academic penalty.

Counselling
It is the responsibility of students to ensure that they register in courses, the combination of which comply both with course pre- and co-requisite requirements and also with the degree regulations. To assist students in this, the Registrar's Office is pleased to arrange appointments. Please call 284-3292, Mrs. J. Adams, Student Services Office.

Academic Regulations For Extension Students

Part time students in the Division of University Extension meet exactly the same requirements for admission and the same requirements for academic standing as do full time students in the Faculty of Arts and Science. However, a number of regulations are of special interest to Extension students.

Maximum Course Load
A part time student may take a maximum of five courses in any Calendar year: three during the winter session and two during the summer session.

Evening and Day Classes
Part time students at Scarborough College generally attend evening classes. However, if a student wishes to enrol in a class that is not offered in the evening session, or if a student cannot for some other reason attend evening classes, arrangements may be made with the Registrar for attendance in day classes. Students who wish to attend day classes are required to obtain the approval of the College and of the Division offering the course. Students must make their initial enquiries at the Registrar's office.

The General Arts Course
Part time students who began their studies in the General Arts Course, and who by May 1969 have completed eleven or more courses in the General Arts Course, will select their courses in accordance with the rules of the General Arts Course. To complete a first year programme, a student must obtain standing in six courses. To complete a second year programme, a student must obtain standing in five additional courses.

Included among these eleven courses must be three courses in one discipline, required to meet the concentration requirement. To complete the third year programme in the General Arts Course, a student must obtain standing in five additional courses, with an average mark of at least 55%. Students need no longer meet group (distribution) or concentration requirements in selecting third year courses.

Students who remain registered in the General Arts course are subject to a number of other regulations, and are strongly advised to consult with the Registrar or Assistant Registrars in making their course selections.

All part time students who began their studies in the General Arts course, but who had completed by May 1969 fewer than eleven courses, as well as all part time students who began their studies in the General Science Course, must complete their studies under the degree requirements of the New Programme.

The New Programme

In addition to the general academic regulations of the New Programme, printed elsewhere in this Calendar, part time students should be aware of one particular regulation of importance to them.

A student in the New Programme may select any combination of courses that suits his academic interests, provided that

1) all pre-requisite and co-requisite requirements are met;

2) no more than seven A-level or 100 series courses are selected among the first fifteen courses successfully completed, and no more than eight A-level or 100 series courses are selected among the first twenty courses successfully completed;

3) no course with another university course as pre-requisite is selected until the student has successfully completed either five courses or four courses with an overall average of 60%. (This latter provision is the same as that faced by full time students. Full time students select their first year courses from among courses with no university pre-requisites. They may select more advanced courses with university courses as pre-requisites only in second year.)

Fourth Year Programmes

A part time student, like a full time student, who completes the third year of the General Arts course may choose to graduate or to continue to the fourth year of the New Programme. Part time students will be permitted to enter fourth year if they achieve a Grade C average in their third year courses.

Any part time student in the New Programme may choose either to graduate on completion of his third year programme or to continue his studies into a fourth year programme.

Mature Students

Many part time students have been admitted to the University on probation as mature students. A mature student on probation will be required to withdraw and to meet in full the published admission requirements if he fails at the first attempt more than two of his first five courses. A

mature student may remove his probationary status by successfully passing at the first attempt *five* courses.

Timetable and Course Descriptions

Summer Evening Session 1970

1) The letters A, B and C prefixed to course numbers indicate levels of complexity and degrees of specialisation.

2) The letters Y and H indicate full Session Courses and Half-Session Courses.

3) For course descriptions see under Winter Day Session 1970-71.

Summer Evening Extension Session 1970.

A programme of sixteen courses is planned for this session, which begins on 19 May and ends on 14 August. Of the sixteen courses, twelve are full-year courses (Y), yielding one credit, and four are half-courses (H), yielding one half-credit towards the University's B.A. or B.Sc. degrees. Each of the courses has classes twice a week from 7:00 p.m. to 9:30 p.m. on either Monday and Wednesday or Tuesday and Thursday. All the regulations, information, dates and fees relating to application, admission and registration for this session can be found in the appropriate sections of this Calendar. If you have any enquiries, do not hesitate to call 284-3127.

Counselling

It is the responsibility of students to ensure that they register in courses, the combination of which comply both with course pre- and co-requisite requirements and also with the degree regulations. To assist you in this, the Registrar's Office is pleased to arrange appointments. Please call Mrs. J. Adams, Student Services Office, at 284-3292. Here are the courses to be offered at Scarborough in the Summer Evening Programme 1970.

Course Number	*Course Title*	*Days of Classes*
ANTA03H	Anthropology: Social Organization (19 May-26 June)	Mon./Wed.
ANTB08H	Anthropology of Development (6 July-14 August)	Mon./Wed.
BIOB14Y	Human Biology	Tues./Thurs.
ECOA01Y	Introduction to Economics	Tues./Thurs.
ENGB04Y	English Poetry, Prose and Drama, 1660-1800	Tues./Thurs.
ENGB10Y	Shakespeare	Mon./Wed.
GGRA01Y	Introduction to Human Geography	Mon./Wed.
GGRB08Y	Geography of Underdeveloped Areas	Mon./Wed.
HISB03Y	History of the United States	Mon./Wed.
HISB05H	Canadian History to 1867 (19 May-26 June)	Tues./Thurs.

HISB06H	Canadian History since Confederation (6 July-14 August)	Tues./Thurs.
POLA01Y	Government of Canada	Tues./Thurs.
PSYA01Y	Introduction to Psychology	Mon./Wed.
SOCB10Y	Sociology: Social Stratification	Mon./Wed.
SOCB18Y	Deviant Behaviour	Tues./Thurs.
SPA001Y	Introductory Spanish	Tues./Thurs.

Facilities for Summer Evening Extension Students

Parking

The College Parking Lots are open, free of charge, to you all.

Library

During the Summer, the Library will be open as follows:
Mondays thru Thursdays – 9 a.m. to 10 p.m.
Fridays – 9 a.m. to 5 p.m.
Saturdays and Sundays – Closed.

Bookstore

Hours of opening for the Summer Session are as follows:
May 19, 20, 21 – 9 a.m. to 9 p.m.
May 22 – 9 a.m. to 5 p.m.
May 25, 26, 27, 28 – 9 a.m. to 9 p.m.
May 29 – 9 a.m. to 5 p.m.
Thereafter, every Monday and Thursday (except August 3 – Civic Holiday) of the Session – 9 a.m. to 9 p.m.; every Tuesday, Wednesday (except July 1 – Dominion Day) and Friday – 9 a.m. to 5 p.m.

Athletics

Summer Extension students have the opportunity to use the recreational facilities of Scarborough College. Four tennis courts, an archery range, a golf range, an outdoor volleyball court, and three playing fields are available. Organized recreational activities such as a tennis club, and tennis and golf tournaments are included in the summer programme. Change room facilities and equipment for free play are also available to the participants.

Timetable and Course Descriptions
Winter Evening Session 1970-71

1) The letters A, B and C prefixed to course numbers indicate levels of complexity and degrees of specialisation.

2) The letters Y, F, S and H indicate respectively Full Year, Fall Term, Spring Term and Year-long Half Courses.

3) Where a student lacks pre- or corequisites for a course, he can only be admitted to that course by the *written* permission of the instructor. Such permission must be submitted to the Registrar.

4) For course descriptions see under Winter Day Session 1970-71.

Winter Evening Extension Session 1970-71

Each course in this session has a class once a week from 7:30 p.m. to 9:30 p.m., starting and finishing on the same dates as classes for Full-Time students (see the Academic Calendar). Some Science courses have Laboratory classes in addition to the Lecture sessions. All the regulations, information, dates and fees relating to application, admission and registration for this session can be found in the appropriate sections of this calendar. If you have any enquiries, do not hesitate to call 284-3127. Please note that every course is subject to cancellation if enrolment is not satisfactory.

Course Number	*Course Title*	*Day*	*Room*	*Instructor*
ANTA01Y	Introduction to Anthropology	Thursday	S309	T.B.A.
ANTA03F	Social Organization	Wednesday	H309	Ishwaran
ANTB02S	Anthropology of Religion	Wednesday	H309	Ishwaran
ANTB11F	Man in the Pleistocene	Thursday	S634	Schroeder
ANTB12S	Man in the Holocene	Thursday	S634	Schroeder
BIOA01Y	Molecular and Cellular Biology Lecture: Laboratory (9 a.m.-12 noon)	Thursday Saturday	S319	Staff
BIOB14Y	Human Biology Lecture: Laboratory (9 a.m.-12 noon)	Wednesday Saturday	S309	Urquhart
CHMA01Y	General Chemistry Lecture: Laboratory (Evening)	Thursday Wednesday	H216	Staff
CHMB05Y	Organic Chemistry I Lecture: Laboratory (Evening)	Thursday Wednesday	S143	T.B.A.
CLAB21Y	Greek and Roman Religion	Tuesday	H309	Warden
COM100Y	Financial Accounting	Monday	S319	Shapiro
ECOA01Y	Introduction to Economics	Wednesday	S319	Denney
ECOB04Y	European Economic History	Wednesday	S143	Pope
ECOB11Y	Money and Banking	Thursday	H309	Donner
ENGA05Y	Canadian literature in English	Monday	H214	Margeson
ENGB04Y	English Poetry, Prose and Drama, 1660-1800	Tuesday	S128	Howard
ENGB05Y	Romantic Literature	Tuesday	S634	Kay
ENGB06Y	Victorian Poetry	Thursday	H214	Thomas
ENGB10Y	Shakespeare	Wednesday	H214	Patenall
ENGB15Y	English Poetry, a study of various forms	Monday	S628	Kirkham
FARA03Y	Introductory Drawing	Monday	Shack	Amenta
FREB21Y	Language Practice	Monday	H310	T.B.A.
FREB24Y	The Philosophical Current In French Literature	Wednesday	H310	Moes
GRHB01Y	History of Greece from 800 B.C. to the Death of Alexander	Wednesday	H308	Boddington
GRHB23Y	Studies in Roman History	Thursday	S628	Corbett
GGRA02Y	Introductory Physical Geography	Tuesday	S319	Greenwood
GGRB04Y	Geography of Canada	Thursday	S630	Cave and Francis

GGRB06Y	Economic Geography	Monday	S143	Bunce
GGRB08Y	Geography of Underdeveloped Areas	Wednesday	S628	Tayyeb
HISB01Y	British History since 1785	Tuesday	S143	Kenyon
HISB03Y	History of the United States	Monday	H215	Dick
HISB05F	Canadian History to 1867	Monday	H309	Silverman
HISB06S	Canadian History since Confederation	Monday	H309	Silverman
HISB07Y	Russia since the Ninth Century	Thursday	H308	Dyck and Rossos
HISB35Y	American Labour History	Tuesday	H310	Dick
ITA001Y	Introductory Italian	Monday	S630	Costa
ITA002F	Intermediate Italian	Tuesday	S630	Franchesetti
ITA004S	Advanced Composition and Conversation	Tuesday	S630	Franchesetti
MATA55Y	Calculus	Tuesday	S309	T.B.A.
PHLA01Y	Introduction to Philosophy	Tuesday	H214	Graham
PHLB53F	Logic, First Course	Thursday	H310	Sobel
PHLB57S	Aesthetics	Thursday	H310	Hartman
PHLB65F	Greek Philosophy: Plato and his predecessors	Monday	S632	Gooch
PHLB67S	Medieval Philosophy	Monday	S632	Mosher
PHYA02Y	Mechanics, Matter and Waves Lecture: Laboratory (To be announced)	Monday	S128	King
POLA01Y	Government of Canada	Monday	S309	Blair
POLB10Y	International Relations	Tuesday	H308	Bishop
PSYA01Y	Introduction to Psychology	Tuesday	H216	T.B.A.
PSYB07F	Statistics	Wednesday	H215	Biederman
PSYB40S	Learning	Wednesday	H215	Biederman
PSYB10F	Social Psychology	Tuesday	H215	Ross
PSYC12S	Current Topics in Social Psychology	Tuesday	H215	Ross
PSYB30F	Personality	Thursday	S128	Efran
PSYC32S	Current Topics in Personality	Thursday	S128	Efran
RUSB21Y	Twentieth Century Russian Literature	Tuesday	S628	Ponomareff
SOCA01Y	Introduction to Sociology	Monday	H216	Gerson
SOCB05Y	Urban Sociology	Monday	H308	T.B.A.
SOCB12Y	Sociology of the Family	Wednesday	S128	T.B.A.
SOCB18Y	Deviant Behaviour	Thursday	H215	James
SPA001Y	Introductory Spanish	Wednesday	S630	Chicoy-Daban
SPA002F	Intermediate Spanish	Wednesday	S632	Leon
SPA003S	Pre-Literary Examination of Texts	Wednesday	S632	Leon
SPAB11Y	Survey of Spanish Literature	Tuesday	S632	Barta
SPAB13F	Romanticism	Thursday	S632	Skyrme
SPAB14S	Modern Hispanic Literature Modernismo	Thursday	S632	Skyrme

SCARBOROUGH COLLEGE

Administration and Faculty

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Executive Vice-President (Non-Academic)
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Vice-Provost and Executive Assistant to the President
D. F. Forster, B.A., A.M.

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Associate Dean
A. C. H. Hallett, B.A., Ph.D.

Associate Dean
G. A. B. Watson, M.A., S.T.B.

Assistant Dean and Secretary
W. D. Foulds, B.A.

The College

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Registrar
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Assistant Registrars
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Division of Humanities

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P. H. Salus, B.Sc., M.A., Ph.D.

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J. Grant, B.A., M.A., *Assistant Professor*
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I. R. McDonald, B.A., Ph.D., *Assistant Professor*

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M. C. Kirkham, M.A., M.Phil., *Assistant Professor*
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R. D. Rodgers, B.A., M.A., *Lecturer*
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Mrs. E. P. Vicari, B.A., M.A., *Lecturer*
Mrs. E. A. Kilcullen, B.A., M.A., *Instructor*

Fine Art

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G. Scavizzi, Ph.D., *Assistant Professor*
Mrs. J. M. Vastokas, B.A., M.A., Ph.D., *Assistant Professor*
Miss M. Schaefer, B.A., M.A., *Lecturer*

French

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Miss W. J. Bancroft, B.A., M.A., Ph.D., *Assistant Professor*
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Mrs. M. E. Kirkness, B.A., M.A., *Instructor*
Mrs. M. Walker, B.A., *Instructor*

German

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M. Marrus, B.A., M.A., Ph.D., *Assistant Professor*
J. L. Pearl, B.A., M.A., Ph.D., *Assistant Professor*
A. N. Sheps, B.A., M.A., Ph.D., *Lecturer*

Italian
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E. Costa, B.A., M.A., *Lecturer*
Miss G. Sanguinetti, B.A., *Lecturer*

Linguistics
P. H. Salus, B.Sc., M.A., Ph.D., *Associate Professor*

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D. L. C. Miller, B.A., M.A., Ph.D., *Associate Professor*
J. H. Sobel, B.Sc., M.A., Ph.D., *Associate Professor*
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D. L. Mosher, B.A., Ph.D., *Assistant Professor*
Miss B. R. Aarons, B.A., M.A., *Lecturer*
P. W. Gooch, B.A., M.A., *Lecturer*

Russian
C. V. Ponomareff, B.A., M.A., Ph.D., *Lecturer*
Mrs. S. Zelonka, M.A., Ph.D., *Lecturer*
N. N. Shneidman, M.P.H.E., M.A., DIP.R.E.E.S., *Lecturer*

Spanish
R. J. Barta, M.A., Ph.D., *Associate Professor*
P. R. Leon, B.A., M.A., Ph.D., *Assistant Professor*
Mrs. J. K. Bartha, B.A., M.A., *Lecturer*
Miss J. M. Maillard, B.A., M.A., Phil.M., *Lecturer*
R. Skyrme, B.A., M.A., M.Litt., Ph.D., *Lecturer*
L. Borel, B.A., M.A., *Instructor*
Mrs. R. Crowe, Diploma—Est. His., *Instructor*
P. Pelman, B.A., M.A., *Instructor*

Division of Science
Chairman
B. Forrin, B.A., M.A., Ph.D.

Astronomy
R. C. Roeder, B.Sc., M.Sc., Ph.D., *Associate Professor*
P. P. Kronberg, B.Sc., M.Sc., Ph.D., *Assistant Professor*

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M. F. Filosa, B.S., M.S., Ph.D., *Associate Professor*
Miss M. Grant, B.Sc., *Instructor*

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G. F. Israelstam, B.Sc., Ph.D., *Associate Professor*
G. A. Yarranton, B.Sc., Ph.D., *Associate Professor*
R. E. Dengler, B.Sc., Ph.D., *Assistant Professor*
Mrs. C. Sparling, B.Sc., Ph.D., *Assistant Professor*

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R. B. Caton, B.A., Ph.D., *Assistant Professor*
R. O. Harris, B.Sc., M.A., Ph.D., *Assistant Professor*
T. R. Lynch, B.Sc., M.A., Ph.D., *Assistant Professor*
J. Riddick, B.Sc., Ph.D., *Assistant Professor*
A. Walker, B.Sc., Ph.D., *Assistant Professor*
G. Brownlee, B.Sc., Ph.D., *Lecturer*
T. Eliades, *Lecturer*
Mrs. M. Bradshaw, B.Sc., M.Sc., *Instructor*
Mrs. K. Henderson, B.Sc., *Instructor*

Geology
A. E. Oldershaw, B.Sc., Ph.D., *Lecturer*

Mathematics
R. B. Brown, A.B., M.S., Ph.D., *Associate Professor*
E. W. Ellers, Dr. rer. nat., *Associate Professor*
P. J. Leah, M.A., Ph.D., S.J., *Associate Professor*
Mrs. H. K. Botta, B.A., M.A., Ph.D., *Assistant Professor*
D. P. Wakfer, B.Sc., M.A., *Assistant Professor*
Mrs. F. E. Anderson, B.Ed., *Instructor*
Mrs. M. Doucette, B.A., *Instructor*
D. G. Hall, B.Sc., *Instructor*
Mrs. M. Hall, B.Sc., *Instructor*

Microbiology
V. V. Kingsley, B.Sc., M.Sc., Ph.D., *Assistant Professor*

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P. J. O'Donnell, B.Sc., M.Sc., Ph.D., *Assistant Professor*
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M. Walker, B.Eng., D.Phil., *Assistant Professor*
G. Woollatt, B.Sc., *Instructor*
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B. Forrin, B.A., M.A., Ph.D., *Associate Professor*
G. B. Biederman, B.Sc., Ph.D., *Assistant Professor*
A. Cheyne, B.A., M.A., Ph.D., *Assistant Professor*
M. G. Efran, B.A., Ph.D., *Assistant Professor*
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Mrs. M. C. Smith, B.A., Ph.D., *Assistant Professor*

Zoology
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M. Miyagi, M.A., B.A., Ph.D., *Assistant Professor*
G. N. Smith Jr., M.A., Ph.D., *Assistant Professor*
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Mrs. P. Dampney, B.Sc., M.Sc., *Instructor*
Miss C. Pickett, B.Sc., M.A., *Instructor*

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T. Liu, B.A., M.A., Ph.D., *Assistant Professor*
K. L. Wyman, B.A., M.A., *Assistant Professor*
M. W. Bucovetsky, B.A., M.A., *Lecturer*

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A. Tayyeb, B.A., M.A., *Associate Professor*

P. Cave, B.A., M.A., D.Phil., *Assistant Professor*
B. Greenwood, B.Sc., *Assistant Professor*
M. F. Bunce, B.A., *Lecturer*
H. S. Swain, B.A., M.A., *Lecturer*
R. Wolfe, B.A., M.A., *Special Lecturer*

Political Science
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P. V. Bishop, B.A., M.A., Ph.D., *Assistant Professor*
R. S. Blair, M.A., *Assistant Professor*
R. E. Stren, B.A., M.A., Ph.D., *Assistant Professor*
Mrs. F. Hawkins, M.A., Ph.D., *Lecturer*
J. K. Spicer, B.A., Dipl.d'I.E.P., Ph.D., *Special Lecturer*

Sociology
R. L. James, M.A., B.A., Ph.D., *Professor*
W. M. Gerson, M.A., B.A., Ph.D., *Associate Professor*
R. Beals, Ph.D., *Assistant Professor*
J. A. Lee, B.A., M.A., *Assistant Professor*
M. E. Hanna, B.A., M.A., *Lecturer*
R. O'Toole, B.A., M.A., *Lecturer*

Commerce
M. Shapiro, B.Comm., *Special Lecturer*

Scarborough College is located in the eastern end of Metropolitan Toronto, approximately eighteen miles from the University's St. George Campus. The College is situated on an estate of more than two hundred acres of unspoiled ravine and woodland. Architecturally and aesthetically the College building is an extraordinary and magnificent complement to the landscape, and since its opening in 1966, has attracted widespread notice. The College is fortunate in enjoying both the privileges of membership in a large and diversified University, and the luxury of a relatively small academic community set in semi-rural environment. In addition, the College offers academic facilities – such as a substantial library and first rate and modern laboratories – seldom available to undergraduate students.
The College is endeavouring to retain and to develop this fortunate combination of an intimate innovative community and a large and various urban University. Participation in the College's life is enthusiastically urged and invariably rewarding.

Library and Study Areas

For a college its size, Scarborough has an exceptionally large and well-equipped library – 100,000 volumes. Students have direct access to the books, which have been selected to support the courses offered in the College, and an expert staff of librarians is on hand to help students make good use of what is available.
The collection of current periodicals is also large and diverse – nearly 1,000 titles including publications of general interest and of academic specialization.
In addition to borrowing from the College library collection, Scarborough staff and students are entitled to use and also to draw on the collection of the University of Toronto's main library. There is a regular book delivery service from the main library to the Scarborough library.
The study space in the College library is equipped with individual study carrels and comfortable arm chairs. Lending and study facilities are open until midnight from Monday through Thursday during the school year, and until five o'clock on Fridays. The library is open on Saturdays between 10 a.m. and 4 p.m., and on Sundays between 1 p.m. and 10 p.m.
Extensive study areas outside of the library are also equipped with individual carrels. These study areas are available for students at any hour during the school year.
Library policy is guided by a committee which includes students as well as faculty.

Scholarships and Financial Assistance

Awards and financial assistance are available in one or a combination of three forms:

Scholarships: Awarded to students for academic excellence, without reference to financial need.
Bursaries: Awarded to students who demonstrate both good academic achievement and financial need.
Interest-free loans: Provided to students who demonstrate financial need. Students must repay loans or assume interest payments after termination of studies.
Scarborough College students may qualify for awards offered by the Province of Ontario, the University of Toronto, or Scarborough College itself.

Ontario Student Awards Programme
In cases where students' and (in the case of dependent students) parents' resources are inadequate, the Ontario Student Awards Programme (OSAP) will provide assistance to help students meet their academic costs.
Most students who are Canadian citizens or landed immigrants, and who have been resident in Ontario for one year prior to beginning their academic programmes, are eligible to apply for assistance from OSAP.
Ontario Student Awards are part interest-free loans and part grants (except in the cases of small awards which are wholly loans). In 1969-70, awards have ranged from as little as $50 to as much as $2,000, depending upon assessed need.
Each loan application is assessed individually according to rules established by the Ontario Department of University Affairs. A description of these rules is available in the brochure, "Ontario Student Awards Program, 70/71", available from the Student Services Office or from the Registrar's Office.
OSAP should be regarded as the primary source of financial assistance for needy Ontario students. Other assistance such as bursary assistance (below) is available only in small amounts to students who do not qualify to apply for Ontario Student Awards or who have received OSAP assistance which is insufficient to meet their needs.
Application forms may be obtained from the Office of the Registrar (284-3127) or from the Student Services Office (284-3292). Students are urged to apply *early* in the summer. Students who wait until registration day in September may have to wait up to two months for assessment of their applications and payment of their awards.
OSAP applications must be submitted by 31 October 1970. Applications submitted after this date but before 31 January 1971 will be considered for one-half the normal assistance. Only in cases where a sudden change in circumstances creates grave need will applications be accepted after 31 January 1971.
Both the OSAP rules and the OSAP application form are complicated. In completing your application please do not hesitate to seek help from the Registrar's Office or from the Student Services Office.

Scholarships

1) University of Toronto Admission Scholarships

Students entering the first year at Scarborough College with outstanding high school records are eligible for a large number of scholarships awarded by the Senate of the University of Toronto. The scholarships are listed in the booklet, *University of Toronto Admission Awards, 1970-71*, available at any Ontario high school.

Application for University of Toronto admission scholarships must be made on application forms available from and submitted to the student's high school.

2) Scarborough College Admission Scholarships

Students entering the first year at Scarborough College with outstanding high school records are eligible for the following scholarships awarded by the Council of Scarborough College. All applicants for admission to the College who present outstanding qualifications will be considered for these scholarships. It is not necessary to submit an application.

The Agincourt Lions Club Scholarship. Gift of the Agincourt Lions Club, this scholarship is awarded to a student with high first-class standing entering Scarborough College directly from any secondary school in the Borough of Scarborough. Value: $300.

Borough of Scarborough Admission Scholarship. One of a number of gifts of the Borough of Scarborough (through the good offices of the Scarborough College Alumni Association), this scholarship is awarded to a student with high first-class standing entering the first year at Scarborough College. Value: $350.

I.O.D.E. Isabel Rutter Chapter Admission Scholarship. One of three gifts of the Imperial Order Daughters of the Empire, Isabel Rutter Chapter, this scholarship is awarded to a student with high first-class standing entering Scarborough College directly from any secondary school in the Borough of Scarborough. Value: $200.

Scarborough College Alumni Association Admission Scholarship. One of several gifts from the Scarborough College Alumni Association, this scholarship is awarded to a student with high first-class standing entering the first year at Scarborough College. Value: $350.

Scarborough College Open Admission Scholarships. Awarded from funds allocated by the Senate of the University of Toronto, a number of scholarships will be granted to students entering the first year at Scarborough College with high first-class standing. The number and value of the scholarships will be determined by the Scarborough College Council with reference to the standing of the potential scholarship winners.

Scarborough College-Varsity Fund Continuing Scholarships. Gift of the Varsity Fund, four continuing scholarships are awarded to students with high first-class standing entering the first year at Scarborough College. Value: $350. in the first year; $500. in no more than three subsequent years. Continuation of the awards is conditional on the maintenance of first-class standing.

Township of Pickering Admission Scholarship. One of two gifts of the Township of Pickering, this scholarship is awarded to a student with first-class standing entering the first year at Scarborough College. Preference is given to Township of Pickering students. Value: $250.

3) University of Toronto In-Course Scholarships

Students who achieve excellent academic standing in first, second and third year are eligible for a large number of scholarships awarded by the Faculty of Arts and Science and by the Senate of the University of Toronto. These scholarships are listed in the Awards Calendar of the Faculty of Arts and Science. All students who achieve outstanding results will be considered. It is not necessary to submit an application.

4) Scarborough College In-Course Scholarships

Students who achieve excellent academic standing in first, second and third year are eligible for the following scholarships awarded by the Council of Scarborough College. All students who achieve outstanding results will be considered. It is not necessary to submit an application.

The Governor General's Silver Medal. This medal is awarded to the student with the highest standing in the graduating class of Scarborough College.

The Borough of Scarborough Scholarships. Two of several gifts of the Borough of Scarborough, these scholarships are awarded: (a) to the student with the highest standing in first year who enters the second year at Scarborough College; and (b) to the student with the highest standing in second year who enters the third year at Scarborough College. Value: $500. each.

I.O.D.E. Isabel Rutter Chapter Scholarships. Two of three gifts of the Imperial Order, Daughters of the Empire, Isabel Rutter Chapter, these scholarships are awarded to students with high Grade "A" standing: (a) in the first year, entering the second year at Scarborough College; and (b) in second year, entering third year in the College. Value: $200.

Scarborough College Alumni Association Scholarships. Two of several gifts from the Scarborough College Alumni Association, these scholarships are awarded: (a) to a student with high Grade "A" standing in first year who enters the second year at Scarborough College; and (b) to a student with high Grade "A" standing in second year who enters the third year at the College. Value: $350. each.

Scarborough College Open Scholarships. Awarded from funds allocated by the Senate of the University of Toronto, a number of scholarships will be granted to students completing first, second and third years with high first-class standing and entering their next years at Scarborough College. The number and value of the scholarships will be determined by the Scarborough College Council with reference to the standing of the potential scholarship winners.

Township of Pickering Scholarship. One of two gifts of the Township of Pickering, this scholarship is awarded to a student achieving first-class standing in first or second year, and entering second or third year at

Scarborough College. Township of Pickering students are preferred. Value: $250.

The Penny Dampney Prizes in Human Physiology. Gift of Mrs. Penny Dampney, instructor in Human Physiology at Scarborough College until 1969-70, these prizes are awarded to the man and woman who achieve the highest standing in Biological Science B14Y, Human Physiology. Value: $125 each.

Bursaries

1) University of Toronto In-Course Bursaries

Students in second, third or fourth year at Scarborough College, who are in financial need and who have achieved a good academic record (at least B+) are eligible to apply for University of Toronto In-Course Bursaries.

Application forms are available at the Registrar's Office and at the Student Services Office.

Applications must be submitted before 15 October 1970.

2) Scarborough College Bursaries

Gifts of the Borough of Scarborough, the Township of Pickering and others, made available through the Scarborough College Alumni Association, these bursaries are awarded to students in real financial need who are making satisfactory academic progress.

Applications, available from the Registrar's Office and from the Student Services Office, must be submitted by 15 January 1971. Value: $150.

3) Scarborough College Special Bursaries

Made available from funds allocated by the Senate of the University of Toronto, these bursaries are awarded to students in real financial need who are making very good academic progress.

Applications, available from the Registrar's Office and the Student Services Office, must be submitted by 15 January 1971. Value: $250 for some awards; $150 for others.

Emergency Loans

The Scarborough College Faculty Bursary Fund has been established from the contributions of faculty members and other members of Scarborough College.

The fund is designed to provide emergency, short-term loans to students who are unable to receive assistance from any other source and who are in need of assistance in order to carry on with their studies.

A student who requires short term assistance in order to carry on with his studies should speak with the Registrar.

Accommodation

Housing Service

Students who wish to find room and board, or who wish to locate in their own apartments, are invited to consult the housing registry maintained

by the Student Services Office. As listings of accommodation quickly become obsolete, we suggest that you arrange a trip to Scarborough in advance of the first week of classes to find a place that suits you.
During the week before classes, the College will provide local transportation and emergency accommodation to students requesting such assistance.
For information, please contact the Student Services Office, Scarborough College, 284-3292.
Students who wish to locate downtown may contact the University Housing Service, 49 St. George Street, Toronto 5, tel. 928-2542.

Co-Operative Residences
In 1969-70 the College operated eight small houses within five minutes' walk of the College. The residences included furnished double and single bedrooms, shared living rooms and shared kitchens equipped with stove, refrigerator, cooking utensils, dishes and cutlery. Residents supplied their own blankets, linen and towels.
Rules were made and administered by the residents.
Accommodation is available for both men and women. For further information and application forms, please write to Scarborough College Cooperative Association, Scarborough College.

Nurses Residence
The Scarborough Regional School of Nursing, located one mile from the College, offers accommodation to approximately thirty women. For information and application forms write to Mrs. Jopson-Taylor, Scarborough Regional School of Nursing, Ellesmere Road, Scarborough. Telephone: 284-6151.

Athletics and Recreation

The students of the College enjoy the benefits of their own local athletic programme which they help to plan and administer through the Executive of the co-educational Scarborough College Athletics Association. The Department of Athletics and Physical Education at Scarborough College co-ordinates and facilitates the various phases of this extensive indoor and outdoor programme. In addition, as members of the University of Toronto, our full-time students have access to the premises and activities of Hart House (men) and the Benson Building (women) on the St. George Campus.
At Scarborough College there is no physical education requirement, yet the benefits derived from participation in sports and athletics are well recognized and every student is encouraged to take an active part in some phase of the athletic programme. The new skills learned and the friendships formed through such participation will often give lasting enjoyment long after university years.
The present on-campus facilities include four outdoor tennis courts,

archery and golf ranges, and several playing fields. Pending construction of the proposed Recreation Centre, the College is making extensive use of the nearby community facilities. Thus several gymnasia, indoor ice arenas, a swimming pool, and a curling rink have been secured to accommodate the various instructional, recreational and competitive activities.
At Scarborough College one of the main programme aims is participation by students in the learning of new sports skills which can be enjoyed also after graduation. Thus golf, horseback riding, tennis, curling, sailing, gymnastics, skiing, modern dance, karate and yoga etc., are emphasized. The more proficient athletes are eligible to compete as members of University of Toronto varsity teams, or join any of Scarborough's representative teams. Those interested in less demanding competition may participate in the Intramural Programme.
The Scarborough College Athletic Letter is awarded to both men and women who accumulate merit points through participation and achievement in the athletic programme.
A handbook containing detailed information regarding all athletic facilities, activities, schedules and personnel will be available in the fall.

Design: Kenneth Fong, Graphics and Photography Department, Scarborough College

Lithographers: Cape & Company Limited

1970

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Academic Calendar 1970–1971

August 17–21	Monday–Friday	Supplemental examinations.
September 7	Monday	Labour Day.
September 14–18	Monday–Friday	Registration at Erindale College.
September 20	Sunday	The late registration penalty will be enforced after this date.
September 21	Monday	Lectures and laboratory classes begin.
September 28	Monday	Meeting of the Council.
October 12	Monday	Thanksgiving Day.
October 13	Tuesday	Meeting of College Councils.
October 15	Thursday	Last day by which changes of course must be made.
November 2	Monday	Meeting of the Council.
November 16	Monday	Meeting of College Councils.
November 20	Friday	*Last day to confirm student programmes.*
November 20	Friday	Last date to withdraw from a first-term course without academic penalty.
November 20	Friday	Fall Convocation.
November 30	Monday	Meeting of the Council.
December 14	Monday	Meeting of College Councils.
December 18	Friday	Last day of classes. First Term.
December 25	Friday	Christmas Day.
January 1	Friday	New Year's Day.
January 4	Monday	Second term begins.
January 4	Monday	Meeting of the Council.
January 11	Monday	Meeting of College Councils.
January 20	Wednesday	The second instalment of fees due.
February 1	Monday	*No second term course may be begun after this date.*
February 1	Monday	Meeting of the Council.
February 14–20	Monday	Reading week – lectures and laboratory classes will not be held.
February 15	Monday	*Last day for withdrawal without academic penalty.*
February 15	Monday	Meeting of College Councils.
March 1	Monday	Meeting of the Council.
March 15	Monday	Meeting of College Councils.
March 29	Monday	Meeting of the Council.
April 9	Friday	Good Friday.
April 10	Saturday	No lecture or laboratory classes after this date. All term assignments must be completed by this date.
April 12	Monday	Meeting of College Councils.
April 19 to May 7	Monday Friday	Annual examinations.
May		Meeting of the Council at the call of the chairman.
May 17	Monday	Summer evening session begins.

Administrative Staff

University of Toronto

President	C. T. Bissell, M.A., PH.D., D.LITT., LL.D., F.R.S.C.
Vice-President and Provost	J. H. Sword, M.A.
Vice-President and Registrar	R. Ross, M.B.E., M.A.
Principal University College	D. V. LePan, B.A., M.A., D.LITT.
Vice-Principal University College	V. E. Graham, M.A., PH.D., D.LITT., F.R.S.C.
Dean, Faculty of Arts & Science	A. D. Allen, B.SC., PH.D.
Associate Dean	A. C. H. Hallett, B.A., PH.D.
Associate Dean	G. A. B. Watson, M.A., S.T.D.
Assistant Dean and Secretary	W. D. Foulds, B.A.

Erindale College

Principal	J. T. Wilson, O.B.E., PH.D., SC.D., LL.D., F.R.S., F.R.S.C.
Dean	E. A. Robinson, D.SC., PH.D.
Associate Dean	W. J. Huggett, M.A., PH.D.
Associate Dean	I. M. Spigel, M.A., PH.D.
Registrar	J. J. Rae, M.A., PH.D.
Assistant Registrar	L. J. Elmer, B.A., S.T.D.
Librarian	H. L. Smith, B.A., B.L.S.
Administrative Officer	R. S. Rawlings, B.A.
Superintendent—Physical Plant	A. O. Miller
Director of Physical Education and Recreation	B. W. Bartlett, B.P.H.E.
Health Service	D. L. Robison, M.D. E. G. Davies, M.D. S. Markson, M.D. V. Degutis, REG.N.

Erindale College Faculty

Anthropology

Professor A. Mohr, A.B., PH.D.
Professor B. A. Sigmon, B.A., M.S., PH.D.
Mrs. R. Vanderburgh, B.A., M.A.

Astronomy

Professor J. R. Percy, B.SC., M.SC., PH.D.
Professor R. Racine, B.A., M.A., PH.D.

Botany

Professor J. R. Harle, M.SC., PH.D.
Professor P. F. Maycock, B.A., M.SC., PH.D.
Professor P. V. Rangnekar, B.SC., M.SC., PH.D.
Professor G. R. Thaler, B.SC., M.SC.

Chemistry

Professor D. R. Clark, B.SC., PH.D.
Mr. L. Johnston, B.SC., PH.D.
Professor G. A. Ozin, B.SC., D.PHIL.
Professor A. J. Poë, B.A., M.A., PH.D.
Professor J. J. Rae, M.A., PH.D.
Professor E. A. Robinson, D.SC., PH.D.
Professor I. W. J. Still, B.SC., PH.D.

Classics

Professor R. L. Beck, B.A., M.A.
Professor T. G. Elliott, B.A.
Professor C. I. Reid, B.A., PH.D.

Economics

Professor G. B. A. France, M.A.
Professor M. J. Hare, B.COMM., C.A.
Mr. F. B. Mayer, B.COM.
Professor G. F. McGuigan, B.A., M.A., PH.D.

English

Professor T. H. Adamowski, B.A., M.A., PH.D.
Professor D. B. Hill, A.B., M.A., PH.D.
Professor S. S. Hole, M.A., PH.D.
Professor D. I. Lancashire, B.A., M.A., PH.D.
Mr. M. Levene, B.A., M.A.
Professor R. Rower, B.A., M.A., PH.D.

French

Mrs. G. Chesneau, L. ES L., C.A.P.E.S., D.E.S.
Professor C. Cloutier-Wojciechowska, L. ÈS L., DIP. D'E. SUP., D. DE L'U
Mr. P. R. Findlay, B.A., M.A.
Mrs. M. Raine, B.A., M.A.
Professor A. L. Stein, B.A., M.A., PH.D.
Mr. D. A. Trott, M.A.

	Professor H. H. Weinberg, B.A., M.A., PH.D.
	Mr. J. Yashinsky, B.A., M.A.
Geography	Mr. A. R. Byrne, M.A.
	Professor D. F. Putnam, B.S.A., PH.D.
Geology	Professor D. H. Watkinson, B.SC., M.SC., PH.D.
German	Mr. W. Meyer-Erlach, B.A.
	Professor J. P. Payne, B.A., M.A.
History	Mr. M. Dafoe, B.A., M.A.
	Professor D. P. Morton, B.A., M.A., PH.D.
	Mr. J. H. MacLachlan, B.A.SC., ED.M.
	Professor W. B. White, A.B., M.S., PH.D.
Italian	Miss P. Frohman, B.A., M.A.
	Mr. L. T. McCormick, M.A.
	Professor E. G. Neglia, B.A., M.A., PH.D.
Mathematics	Professor T. Bloom, B.SC., M.A., PH.D.
	Professor P. H. H. Fantham, M.A., D.PHIL.
	Professor J. E. LeBel, M.A., PH.D.
	Professor M. Mather, B.A., PH.D.
	Professor F. D. Tall, A.B., PH.D.
	Professor S. M. Trott, B.SC., M.A., PH.D.
Philosophy	Professor J. V. Canfield, M.A., PH.D.
	Professor C. E. Cassin, B.A., M.A., PH.D.
	Professor W. J. Huggett, M.A., PH.D.
	Professor A. Rosenthal, M.A., PH.D.
	Professor M. Schiller, B.A., PH.D.
Microbiology	Professor A. Guha, M.SC., D.PHIL.
Physics	Professor P. P. M. Meincke, B.SC., M.A., PH.D.
	Professor H. W. Taylor, B.SC., M.SC., PH.D., F.INST.P.
	Professor D. C. Tozer, B.SC., PH.D.
	Professor J. T. Wilson, O.B.E., PH.D., SC.D., LL.D., D.SC., F.R.S., F.R.S.C. (Physics)
	Professor S. S. Wong, B.S., M.S., PH.D.

Political Science	Professor J. Barros, A.B., M.I.A., PH.D. Mr. D. H. Gardner, B.A., M.A. Professor A. A. Kontos, M.A., PH.D. Professor B. Kovrig, M.A., PH.D. Mr. A. McDougall, B.A., M.A.
Psychology	Professor T. M. Alloway, M.A., PH.D. Professor L. Krames, B.A., M.A., PH.D. Mr. D. M. Keller, B.A. Professor P. L. Pliner, B.S. Professor I. M. Spigel, M.A., PH.D.
Religious Studies	Professor L. J. Elmer, B.A., S.T.D.
Russian	Mr. N. Shneidman, M.P.H.E., M.A.
Sociology	Mr. A. M. Bennett, M.A. Mrs. M. Cooper, B.A. Professor W. E. Kalbach, B.A., M.A., PH.D. Mr. A. T. R. Powell, M.A.
Spanish	Professor O Hegyi, M.A., PH.D. Professor E. G. Neglia, B.A., M.A., PH.D. Professor M. J. Scarth, B.A., M.A. Professor J. Webster, B.A., M.A., PH.D.
Zoology	Professor D. Gibo, B.A., PH.D. Professor G. K. Morris, B.S.A., M.A., PH.D. Professor R. C. Plowright, M.A., PH.D. Professor P. J. Pointing, B.SC., PH.D. Professor B. I. Roots, B.SC., PH.D. Professor W. G. Wellington, B.A., M.A., PH.D.

The Principal's Message

For the past several years university students have been restless. They have demonstrated in Berlin and Prague, across Europe and the Americas and in Japan and China. Explanations for this turbulence have been as varied as the geographical settings. Students have complained about oppressive professors, racial discrimination, inadequate support, repressive governments, antiquated teaching and overcrowded buildings. They have protested against wars, against compulsory military service, against companies which manufacture armaments and against universities which engage in defence research. Outside observers have blamed foreign conspiracies, the use of drugs, permissive societies, affluent economies and undisciplined upbringing. Doubtless all of these have played a part in certain instances, but these complaints are so varied, in some cases so contradictory, and often of such long standing, that one is tempted to search for deeper common causes to explain such widespread and recent turmoil.

Only two factors appear to be universal. One is that many of the worst disturbances have occurred at large universities in big cities. It does seem that, when many people are crowded into little space, with inadequate recreation and with impersonal treatment, they become unhappy and turbulent. The other possibility is rarely admitted. It is that universities have not changed fast enough to keep pace with the times and that they are in some respects old-fashioned. Thus they do not satisfy today's students and they may not fully meet their legitimate needs and aspirations.

Fortunately the University of Toronto has done much to ameliorate both of these liabilities. By preserving its traditional college system, and by opening new campuses it has reduced overcrowding and sought to maintain friendly and close relations between students and their professors. At the same time President Bissell, Dean Allen and Professor Macpherson have led the faculty in completely revising the curriculum in the arts and science; students have achieved a wide freedom of choice in selecting their courses; the university has introduced new methods of instruction and is revising its constitution.

Erindale was founded during this period of transition and disruption. We see that the world has changed and we are aware that this situation invites innovation in the universities and that our opportunity to undertake it is great. We appreciate the tranquility which our large campus provides, the ease of communication possible in a small community of faculty and students and the advantages which membership in a great university confers. These strengths offer a secure base upon which to build and experiment.

Some things have been done already. More remains to do, but one immediate change has been that henceforth students at Erindale will have a share in establishing college policy. They take a responsible part in college councils and committees, witnessing how the college arrives at decisions and participating in the process.

The faculty and students are constantly meeting to seek better ways to learn, new combinations of instruction, fresh fields for research and above all how a university and its people can best contribute quality and vitality to the life of their times.

General Information

Erindale College, the newest college of the University of Toronto, opened in September 1967. In this our fourth year of operation we are offering the complete three years of the New Programme leading to the B.A. and B.Sc. degrees.

The admission requirements are those of the University of Toronto as described in the Undergraduate Admission Handbook 1970–71 which is obtainable at secondary schools or from the Director of Admissions, University of Toronto. The Calendar of the Faculty of Arts and Science called "The New Programme – 1970–71" gives a full account of the general regulations governing the college. The academic standards and the rules governing requirements for standing are the same on all campuses of the University of Toronto.

In this booklet "Erindale College – The New Programme" the courses offered at Erindale College in 1970–71 are described and brief statements about the content of the various subjects taught is given.

Full-time day students wishing information about the college should address: The Registrar, Erindale College, University of Toronto. Telephone: 828-5231 or 828-5331.

Part-time students wishing information about evening courses given at the college by the Division of University Extension should write or telephone: Division of University Extension, 84 Queen's Park, Toronto 5. Telephone: 928-2393.

The college is governed by the Erindale College Council which consists of faculty, administration and students.

Student Facilities

Erindale College has a large Undergraduate Library of 80,000 volumes. This is supplemented by the facilities of the St. George campus library from which books and periodicals may be borrowed by Erindale College students.

A free bus service is provided for students between the college and the Islington-Bloor subway station; the Clarkson GO station and the St. George campus.

A Doctor is in attendance and a Registered Nurse is on duty at the college at all times.

Housing

Residence needs of Erindale students are looked after by the Erindale College Housing Association. The Association provides: 1) five, on-campus, residential homes with a total accommodation for approximately forty students; 2) an up-to-date listing of families in the area who offer students accommodation in their homes. For information call: 828-5331.

S.A.G.E.

The Student Administrative Government of Erindale is the undergraduate association which is responsible for student activities at Erindale. Managed entirely by the students, S.A.G.E. is the group that organizes a variety of activities which are designed to provide our students with an enriching environment. S.A.G.E. has been involved in

academic programmes as well as providing a well-rounded social life at the college. While the executive is elected the previous spring, all students are invited to participate in S.A.G.E. activities either by running for an elected position on the Council or by becoming involved in some of their working committees.

Physical Education

Do not compare the Physical Education Programme at Erindale College to any you have experienced previously. This programme is keeping pace and actually jogging ahead of the needs and interests of Erindale's community.

Ours is a co-educational programme offering opportunities for instruction, competition and informal recreation in team and individual physical activities.

Student involvement and decision-making is fulfilled in E.C.A.R.A. This Erindale College Athletic and Recreation Association guides intramural competition and co-ed club activities.

Expansive outdoor facilities and growing indoor facilities allow this programme to be as varied and broad as participants at Erindale are willing to make it.

Students at Erindale are not required to take a course in Physical Education nor are they required to have a Medical Examination unless they are taking part in organized team sports.

Location

Erindale College is situated in the town of Mississaugua on Mississauga Road, about ½ mile north of #5 Highway. It may also be reached by going south about 4 miles on Mississauga Road from the Macdonald-Cartier Freeway (#401) at Exit #41.

Admission Requirements 1970–71

The Undergraduate Admission Handbook 1970–71 and the Calendar of the Faculty of Arts and Science 1970–71 contain the detailed admission requirements of the Arts and Science Faculty of the University of Toronto. The following is a summary of these regulations.

The following Ontario Grade 13 subjects (or their equivalent) are approved subjects for purposes of admission to this Faculty:

One-Credit

Biology; Chemistry; Physics; Geography; History; Accountancy Practice; Home Economics; Music; Art. A candidate may present for credit only one of: Accountancy Practice, Art, Home Economics, Music.

Two-Credit

English; French; German; Greek; Hebrew; Italian; Latin; Russian; Spanish; Mathematics A (alone); Mathematics B (alone).

Three-Credit

Mathematics A and B (two subjects). If both subjects are presented, Mathematics B is given only one credit.

Ontario Grade 13 Requirements

Two of English, another language, Mathematics (either A or B); and optional subjects for a total of seven credits. Applicants are urged to consult the calendar of the College before selecting their Grade 13 subjects as many courses in the languages, mathematics and sciences require Grade 13 prerequisites.

Since accommodation and certain other facilities are restricted, the University cannot guarantee the acceptance of all qualified applicants.

Applicants for admission should therefore regard the holding of the published admission requirements as meaning only that they are eligible for selection to the University.

Under the University's admission practices, the school record of the applicant, the confidential report of the school and available standardized tests are considered. The length of time in secondary school, and the number of sittings at Grade 13 examinations needed to obtain entrance requirements are also taken into account.

The University of Toronto operates on an academic year system. Admissible candidates proceeding in the regular manner as full time students may begin a degree programme only in September.

Application forms should be carefully completed according to the instruction sheet attached to the form, and submitted to the Office of Admissions, Simcoe Hall.

Candidates currently in Ontario Grade 13:

Application forms are obtained from the high school. University of Toronto calendars are sent to Ontario Secondary Schools, Ontario Public Libraries, and Canadian Universities.

Other candidates should first write to the Office of Admissions specifying the course in which they are interested and giving full details regarding their academic standing. If an applicant appears to qualify for consideration he will be given an application form and further instructions.

It is strongly recommended that Ontario Grade 13 candidates have Grade 12 standing in at least *six* subjects (excluding Physical Education).

Students in attendance at Ontario secondary schools should present the results of the aptitude and applicable achievement tests offered by the Service for Admission to College and University or through the Ontario Department of Education.

Mature Students

Students twenty-five years of age or over, residents of Ontario for at least one year, who have a sound academic record and at least 66% in at least one Grade 13 subject or its academic equivalent, will be considered for admission to the Faculty of Arts and Science as mature students.

Summary of Terminal Dates

Applications for admission to undergraduate degree courses should be submitted as early as possible in the year for which the applicant seeks admission, and not later than the dates below.

1 April 1970	Last day for applications for June admission.
1 June 1970	Last day for application for regular full-time courses.
11 June 1970	Students who have applied before 1 April 1970 will be told whether they are admitted or not.
26 June 1970	Students must accept or refuse offers of admission by this date.

Dates for Registration 1970–71

FIRST YEAR

Monday, September 14	A–E (incl.)	9–12 and 2–4.30 p.m.
Tuesday, September 15	F–Q (incl.)	9–12 and 2–4.30 p.m.
Wednesday, September 16	R–Z (incl.)	9–12 and 2–4.30 p.m.

SECOND AND THIRD YEARS

Thursday, September 17	A–Z (incl.)	9–12 and 2–4.30 p.m.
Friday, September 18	A–Z (incl.)	9–12 and 2–4.30 p.m.
Monday, September 21	First Day of Classes.	

Schedule of Fees

This is a condensation of the section on Fees from the Arts and Science Calendar which sets out a complete fees schedule. Fees are subject to change by the Board of Governors.

Bachelor of Arts and Bachelor of Science

The academic fee included the following fees: tuition, library and laboratory, examination, degree, physical education. Incidental fees include such things as Hart House (men), students' societies, athletics, health services, etc.

The first instalment of fees is due on or before registration. The second instalment is due the opening date of the second term and must be paid before January 20th. A fine for lateness of three dollars a month will be imposed.

There is a supplemental examination fee of $10 for one subject and $5 for each additional subject for students in day classes.

FEES				INSTALMENTS	
Academic		*Incidental*	*Total*	*First Term*	*Second Term*
Men	$470	$50	$520	$285	$238
Women	$470	$44	$514	$279	$238

Each student enrolled in the Faculty of Arts and Science (Erindale College) must pay annual fees to the Office of the Comptroller, Fees Department, according to the above schedule. (Please indicate Faculty or College and student number on the back of the cheque.) Make cheques payable to the University of Toronto.

Scholarships Awards and Bursaries

Erindale students, as members of the University of Toronto, are eligible for admission scholarships and bursaries awarded by the University, the Provincial Government, and other interested bodies. In addition, a number of awards has been established exclusively for Erindale students. Full details are contained in the Admission Awards Calendar, available at secondary schools or from the Office of Student Awards, Simcoe Hall, University of Toronto. A limited number of awards are reserved for non-Ontario students. Applications for all admission scholarships should be sent directly to the Office of Student Awards, and *not* to Erindale College.

ADMISSION SCHOLARSHIPS:

Ontario Scholarship Programme: The Province of Ontario awards an Ontario Scholarship, worth $150, to all students who achieve an average of 80 per cent or better in papers worth seven credits, as required for the Ontario Secondary School Honour Graduation Diploma. No application is necessary.

Admission Awards open to Erindale students:

The following entrance awards are reserved for Erindale students, but applications should be made to the Office of Student Awards, Simcoe Hall, University of Toronto.
Erindale-Cooksville Lions' Club Centennial Scholarships: awarded to students entering First Year from the geographical area served by the Club. Two awards – value $150 each.
Oakville University Women's Club Award: awarded to a female graduate of an Oakville Secondary School who is a full-time student at Erindale College. Value: $200.
Varsity Fund Scholarship: four annual awards, renewable if first class standing is maintained. Value: $350 for the first year and $500 for each of the two subsequent years.
Special Erindale Entrance Scholarships: Value $150.

SPECIAL ERINDALE COLLEGE AWARDS:

A number of in-course (Second and Third Year) awards and bursaries is awarded by the Erindale College Scholarships and Awards Committee. Applications for these awards should be made through the Office of the Registrar, Erindale College.
Port Credit University Women's Club Award: available to a mature woman student who has returned to education after an interruption in her educational programme. Value: $300.
Port Credit University Women's Club Book Prize: awarded to the woman student enrolled in the First Year who obtains the highest standing in the final examinations of that year. Value $50.
Chreston-Macedonian Bursaries: awarded on the basis of academic standing and financial need. Maximum value $250.
Progressive Conservative Women's Association (Peel South) Award: awarded to a

full-time student entering Third Year who is specializing in Political Science. Value $200.
Mrs. Lois Spigel Book Prize: awarded to a student specializing in the Social Sciences. Value $50.
Special Erindale College Awards: awarded according to the financial need of the individual student.

OTHER FINANCIAL ASSISTANCE:

Ontario Student Awards Programme

All students who are residents of Ontario and who satisfy the admission requirements of a Canadian university or an eligible post-secondary institution in Ontario may apply for an award under this Programme. To receive an award, a student must establish a need for assistance and enrol in an eligible institution. An award under this Programme will be made to the extent of established need in a combination of a non-repayable grant and a Canada Student Loan. Apply: On application forms available at the University of Toronto, Office of Student Awards, or Erindale College.

Courses Subjects and Programmes

In this calendar the word *subject* refers to an academic discipline such as English, Chemistry, or Psychology; the word *course* refers to a particular set of lectures or laboratories in a subject such as Chemistry 235E or History 100; the word *programme* refers either to the collection of courses a student is taking in a particular year, e.g. second year programme, or to the complete group of courses he is taking or intends to take – e.g. the Specialist History Programme.

Students are referred to the Arts and Science Calendar 1970–71 for further details regarding the rules and regulations of the Faculty of Arts and Science. If a student has any questions about the content and scope of certain subjects, or courses, he should consult a professor in the subject or the College Registrar.

In 1970–71 the New Programme will be in operation in all years in the Faculty of Arts and Science of the University of Toronto.

No attempt is made in the New Programme to distinguish between Generalist (General) or Specialist (Honours) programmes – the degree eventually awarded will depend upon the subjects and courses that make up each individual student's programme. Thus a student on entry to the University no longer has to make an irreversible decision to be in Arts or Science or to follow a three or four year programme of study. These decisions can now be made at various points of a student's progress through the University in terms of new and developing interests and levels of achievement. It should, however, be noted that the flexibility and choice now available do not prevent a student with definite aims and developed interests from following them from the start. It is to be hoped that even students with well defined aims will take the opportunities offered by the New Programme to explore unfamiliar fields of knowledge.

In the *first year* students are free to choose any "100" series courses provided that pre-requisites, if any, are satisfied. "200" and "300" series courses, unless they have the symbol (I) under the number, are *not* available to first year. It is inadvisable for students in first year to take more than one such course. If a student anticipates the possibility of *Specialization* in a particular field in his higher years he should select at least one course in this subject in his first year. Particularly in selecting a first year programme students are strongly advised to consult an academic counsellor for advice.

In higher years, students may wish to choose programmes which will allow them to specialize in a particular discipline; they may combine two areas (e.g. Sociology and Psychology) or they may choose a set of courses which will allow them to be generalists in a particular field; e.g. science, humanities or social sciences. Students are urged to consult the professors asking them which courses would best fit their aims and which related courses they should take.

Two innovations in the courses at Erindale this year are:

1 The institution of a UNIVERSITY 100 (UNI 100) which is a comprehensive course entitled MYTHS and MODELS and is the equivalent of three first year credits. A description of this course is given on page 31.

2 Interdisciplinary Courses

a Communications	CMM 100ES	—	Information Theory
b Joint Linguistics & Philosophy	JLP 200EF	—	Semantics and Linguistic Theory
c Joint Psychology & Zoology	JPZ 100E	—	Population Regulation Mechanisms
d Drama	DRA 200E	—	Drama Through Acting

Students interested in qualifying for entry to the Faculties of Medicine or Dentistry should consult with the secretaries of these Faculties regarding the required courses. At present it would seem that for Dentistry and Medicine, Chemistry 120E, Physics 110, Biology 100E are required in the first year. For Medicine two years of the New Programme are required and Chemistry 235EF and Statistics 232 should be taken in the second year.

Qualifications for teachers' Type A certificate, College of Education, in general, requires a four-year degree with the equivalent of eight courses in a major teaching subject. It is desirable that students get specific information from the Registrar of the College of Education.

Students desiring to specialize in a particular subject, e.g. Philosophy, or pair of subjects, e.g. Mathematics and Physics, should consult with a staff member of the Department(s) concerned. A brochure describing courses required for *Specialization* will be available in the early summer and will be mailed to students who have been admitted (I year) or have pre-registered (II and III years).

Time-tables will be ready well in advance of Registration and will be mailed to all students who have accepted offers of admission or registered by mail.

Conditions for Academic Standing

I First Year Programme

a A student shall be said to have completed a First Year programme when he has obtained standing in *five* courses designated as being available to First Year students.

b A student may not begin any courses not offered to First Year students until he has either:

i completed a First Year programme, or

ii has standing in four courses of a First Year programme with an overall average (in these four courses) of at least 60%.

c A student who has a term mark of at least 60% in a failed 100-series course in a First Year programme will be permitted to write a supplemental examination. Failure in a supplemental examination will not count as a second failure, but will necessitate re-enrolment in the failed course or a substitute.

II Second Year Programme

A student shall be said to have completed a Second Year programme when he has obtained standing in ten courses, at least three of which must be 200 or higher series courses.

III Third Year Programme and Requirements for Three-Year Degree

A student shall be said to have completed a Third Year programme and shall be entitled to receive a bachelor's degree (Bachelor of Arts or Bachelor of Science) when he has

a obtained standing in fifteen courses at least *eight* of which must be 200 or higher series courses.

NOTE: There is no restriction as to the number of 100-series courses to be taken in any year.

b a final mark of 60% or better in each of at least eight of the fifteen courses. Of these eight at least four must be 200 or higher series courses.

c for a Bachelor of Science degree, included in the eight or more required 200 or higher series courses at least six courses offered by one or more of the following departments: Astronomy, Botany, Chemistry, Geography (to be specified), Geology, Mathematics, Physics, Psychology, Zoology.

d notified his College Registrar no later than (a date to be announced) that he wishes to receive his degree.

N.B. The designation "Bachelor of Arts (Three-Year)" or "Bachelor of Science (Three-Year)" will appear on the student's academic record.

IV Entry into a Fourth Year Programme

A student shall be permitted to enter a Fourth Year programme only if he has completed the requirements for a bachelor's degree as described in III above.

V Fourth Year Programme and Requirements for a Four-Year Degree

a A student shall be said to have completed a Fourth Year programme and shall be entitled to have the designation "Bachelor of Arts (Four-Year)" or "Bachelor of Science (Four-Year)" entered on his record when he has
- **i** qualified for a 15-course degree
- **ii** completed an additional five courses, no more than one of which may be a 100-series course
- **iii** obtained a final mark of 60% or better in each of at least four of the five courses
- **iv** for a Bachelor of Science degree, included in the twelve or more required 200 or higher series courses at least nine courses offered by one or more of the following departments: Astronomy, Botany, Chemistry, Geography (to be specified), Geology, Mathematics, Physics, Psychology, Zoology.

b For the degree of Bachelor of Commerce a student must have
- **i** qualified for a 15-course degree
- **ii** obtained standing in a total of twenty-three courses as outlined in the calendar for the completion of the "Commerce and Finance Programme".
- **iii** obtained a final mark of 60% or better in each of at least four of the six courses listed for the Fourth Year programme.

VI Refused further registration in the Faculty

A student will be refused further registration in the Faculty if:

a he fails four courses in his first ten attempts, or

b he fails five courses in his first fifteen attempts, or

c he fails six courses, or

d he fails to satisfy the requirements for a degree as specified in III in his first twenty attempts.

NOTES: **1** A student is liable to be refused registration in the Faculty for one year if he fails a minimum of two courses at the first attempts in any year.

2 Failed supplemental examinations in first year do NOT count as second failures.

VII General Regulations

a All students admitted to the eight Colleges of the Faculty will normally be expected to take a full programme of studies (five courses) in the winter day session of each year. With the approval of the College concerned and the Faculty exceptions may be made.

b **i** A student may withdraw from his programme (winter-day) without academic penalty up to *February 15th* each year.

ii If exceptional circumstances warrant it a student may be permitted, on petition, to withdraw from not more than one course (or two half-courses) of his programme without academic penalty.

iii A student may withdraw without academic penalty and without petition from an extra first term half-course before *November 20th* and from an extra full or second term half-course before *February 15th*.

iv Credit will be retained for any half-course completed and discredit noted for any half-course failed before the date of withdrawal.

c Students who wish to enrol in fewer than five courses at any one time may be admitted to the Division of Extension. Such a student will normally enrol in winter evening courses or summer day or evening courses, but may, with the permission of the Department concerned, also enrol in winter day courses.
N.B. A maximum of three courses may be taken in a winter session.

d Normally, credit towards a degree will not be given for an extra (sixth) course.

VIII Standing in a Course (or Half-Course)

a The following scale of marks will be used in all courses and half-courses in all years:

MARK	GRADE
> 80%	A
70–79%	B
60–69%	C
50–59%	D
below 50%	Fail

b In the case of half-courses, standing must normally be obtained in each half-course attempted. Marks in two half-courses may not be averaged to produce standing in a whole course-equivalent, except where the Department(s) concerned specify that this will be permitted for particular and stated combinations of two half-courses.

IX Term Marks and Examinations

The method of arriving at a final mark for each course (or half-course) will be decided by the Department offering the course, with the proviso that the method will be decided by a reasonable date. In those courses where final examinations are required these will be held in a final examination period arranged by the Faculty. Final examinations will normally be held in 100-series courses. Requests for exemption of courses from this regulation shall be brought before the Council. The final mark in the 100-series courses will normally be made up of a term mark and an examination mark with the restriction that not less than one-third nor more than two-thirds of the final mark will be based on term work.

Departments are, in general, responsible for the standards of marking used in the courses that they offer and for the communication of these standards among their members from year to year so as to ensure their equitable interpretation and application.

X Aegrotat Consideration

If the ability of a student to complete a course is affected by illness or domestic

problems, a petition may be made through his College Registrar for consideration by the Faculty. If there are adequate grounds for the petition the Department concerned will determine the status of the work done by the student and the steps, if any, that he must take in order to complete the course.

XI Transcripts

Full copies of his transcript will be issued to any student at any time, subject to reasonable notice and a nominal copying fee. Each transcript will show:

- **a** Each course taken, with a number of course and brief descriptive title.
- **b** Standing in each course attempted, with marks and letter grades for each attempt, including any marks obtained in supplemental examinations.
- **c** The completion of a named programme if the department(s) concerned so recommend.
- **d** Overall standing for each year with marks and letter grades.
- **e** Degree obtained.

The Annual Examinations

The annual examinations are held in late April and early May.

The August Examinations

Candidates who are permitted to write supplemental or deferred examinations must submit a completed form of application to the Secretary, Faculty of Arts and Science, by July 10th. The supplemental examination fee is $10.

Subject Abbreviations

ANT	Anthropology	HIS	History
APM	Applied Mathematics	ITA	Italian
AST	Astronomy	JBC	Joint Biology and Chemistry
BIO	Biology (Botany, Zoology, and Microbiology)	JLP	Joint Linguistics & Philosophy
		JPZ	Joint Psychology & Zoology
CHM	Chemistry	LAT	Latin
CSC	Computer Science	MAT	Mathematics
CMM	Communications	PHL	Philosophy
DRA	Drama	PHY	Physics
ECO	Economics	POL	Political Science
ENG	English	PSY	Psychology
EPS	Earth & Planetary Sciences (Geology and Physics)	REL	Religious Studies
		SLA	Slavic Languages & Literature (Russian)
FRE	French		
GER	German	SOC	Sociology
GGR	Geography	SPA	Spanish
GLL	Greek & Latin Literature	STA	Statistics
GRH	Greek & Roman History	UNI	University (Combined Course)
GRK	Greek		

Subjects Taught at Erindale

In the following pages a group of short paragraphs describing the content and scope of the various subjects is given. It is hoped that these will aid the student in getting a better understanding of the particular subjects. This is especially the case for subjects not formally given at the secondary school level.

Requirements for specialization in various subjects will be sent to you at a later date but it is recommended that students who wish to specialize in a certain discipline consult a professor in the subject.

Anthropology

Anthropology is the study of human biology and culture and their connections. *Physical Anthropology* focuses on the evolution of man and his nearest primate relatives, as revealed by fossil remains, and on the constitution, physiology and variation of living populations. *Cultural Anthropology* is the study of the way of life of peoples throughout the world, their economy, social organization, religion, language. Particular emphasis is given to non-western groups. Conclusions are drawn about interrelationships of cultural elements, man's relationship to the environment and processes of culture change. Physical evidence (habitations, tools, food remains) of groups no longer extant are investigated through *Archaeology* to reconstruct the cultures of the past and to trace their development from earliest times.

The Erindale Anthropology programme offers the student the general background necessary for the advanced training required for professional positions. It is the special concern of the faculty to introduce students to research methods of physical and cultural anthropology including archaeology and to involve them in the research programmes of the department. Students planning an anthropology concentration should consult *anthropology faculty* members for advice.

Anthropologists are employed as faculty in universities and colleges, as researchers in museums and by government. For additional information see *Anthropology as a Career* by Wm. C. Sturtevant, available at the Erindale College Library.

Astronomy

Although the fascination of the skies is timeless, astronomy as a science has progressed very far in this last century. From a largely mathematical discipline, practiced by a race of inscrutables working in private observatories, it has developed into an integral part of our everyday life.

At Erindale College, two astronomy courses will be offered. Both are self-contained survey courses, employing a combination of lectures, discussion groups, laboratory exercises and evening observing sessions. The excellent facilities of the David Dunlap Observatory, the McLaughlin Planetarium, the St. George Campus Observatory and of Erindale College itself will be used.

Biology

Biology is the science of living organisms – their kinds and relationships, origins and evolution, structure and development, their functions and mutual relationships in

the environments in which they occur. Biology relates to such major human problems as population, conservation and pollution. Studies of the interaction of plants, animals and environment show how famine and disease follow the unwise use of habitat and how pollution aggravates these problems. A study of Biology is a key to the solution of many of these world problems.

Botanists, microbiologists and zoologists at Erindale cooperate closely in organizing courses and programmes in *Biology* which stress the relationships of plants and animals in terms of form, function, environment and microstructure, from the ecosystem, whole plant or animal down to the molecular level. *Botany* is concerned with plants, their structure, functions and basic relationships to the environment. The food we eat, the air we breathe, the drugs that heal us, are all ultimately tied to the relation of plants to the natural environment. Plants are the basis of vast and complicated food chains in the oceans, lakes and rivers as well as in terrestrial ecosystems. Plants may be studied from many points of view. One approach is to subdivide the subject on the basis of the different classes of plants, another approach is to deal with physiology, genetics, ecology, taxonomy, plant geography and systematics. *Zoology* is the science concerned with the study of the structure, the functioning and the interrelationships of animals. The general field of zoology is divided into a large number of special areas of study and research. One way to subdivide zoology is according to the classification of animals; another way is to divide it by methods of study such as: cell biology, radiation biology, physiology, genetics, ethology (animal behaviour), and population biology. *Microbiology* is the study of minute living forms that can be seen as individuals only with the microscope and is concerned with small *plant* forms (algae, molds, yeasts and bacteria), single-celled *animals* (protozoa) and viruses. Its separation from Botany and Zoology is therefore somewhat arbitrary.

The courses offered at Erindale in Biology are of three levels – introductory (100 series), intermediate (200 series plus BIO 320E and 321E), and specialized (300 series except BIO 320E and 321E). Staff will assist students in organizing an appropriate group of courses according to their interests or a specialized programme in biology.

Careers in biology are in research, in teaching at all levels, and in government and industry. Professional careers in biology require specialization at the undergraduate level, and usually an advanced degree. Students should bear this in mind when planning programmes. Students who intend to become high-school biology teachers are urged to arrange programmes to meet the requirements of the High School Assistant's Certificate, Type A, Ontario Department of Education.

Chemistry

Chemistry is both a challenging intellectual pursuit and a dominant force in shaping modern civilization. Modern chemistry provides an understanding of the structures and properties of atoms and molecules and uses this knowledge to interpret and predict the changes associated with chemical reactions. In addition to its vital role in

modern science-based industry, chemistry has an increasingly important bearing on other sciences such as biology, the medical sciences, psychology, geology, metallurgy and astrophysics. This is reflected in the courses offered in the recommended programme in Chemistry. The basic core of chemistry courses, with ancillary Mathematics and Physics, will enable the student to choose courses at the fourth year level reflecting his specific area of interest.

The Chemistry programme offered at Erindale College is a very suitable preparation for those intending to teach chemistry in High School (Type A certificate); continuation into graduate work or entry into industry. It also includes courses for those working in cognate disciplines such as biology and planetary and earth sciences.

Classical Studies

Classical Studies are concerned with the languages, literature, philosophy and history of the Greeks and Romans. Courses in this subject provide a helpful introduction to a very wide range of studies from Indo-European linguistics to modern political theory. Whether the student approaches the Classics in the original languages or in translation, he will find an intelligent people of another society who tried to meet basic and universal issues. While courses provide training, for example, in philological or historical method, classical studies is central to a liberal education.

Earth and Planetary Sciences

The earth is so vast and complex, that it is studied in many different ways. Geologists examine and describe the land surface. Geochemists consider the chemical processes which have formed it. Paleontologists reconstruct the life of the past. Geophysicists employ techniques borrowed from physics to explore its interior and hidden ocean floors.

Its relation to the moon, other planets and the rest of the universe have long excited interest, but until now meteorites have been the only samples of extra-terrestrial material available to us. A new era opened in 1969 when astronauts brought back the first specimens from the moon. Some of these have already been studied at Erindale College.

As a result of being able to combine new discoveries with older information scientists are now gaining a much clearer concept of the origin and nature of the earth and of the processes which have been operating to move continents about, raise up mountains and form ore deposits. These new discoveries involve so many different approaches to the study of the earth and its relations to the rest of the universe that the name Earth and Planetary Sciences is being used here to include them all and to embrace the latest methods with those already well established.

Economics

The study of economics does not teach one to run a business, balance a family budget or make money on the stock market. More significantly it deals with the

functioning of the economic system. Every nation, whatever its political orientation (totalitarian, socialist or capitalist) and whether it is technologically advanced or not has to contend with these economic decisions.

In recent years economic research has been particularly concerned with the diagnosis of two inversely related phenomena; excessive unemployment and inflationary price increases. Stress has also been given to the underlying sources of economic growth in both the industrial nations and the low-income countries.

In Canada, the problems of differential rates of regional development, the degree and impact of foreign ownership in Canadian industry and an equitable distribution of the tax burden are contemporary economic issues of significance.

The course sequence in Economics at Erindale is designed to accommodate the interests of both specialists and generalists. The specialist is encouraged to take both calculus and statistics in his early years. The generalist has the opportunity of taking a minimum of economic theory (two courses) before he is permitted to enrol in courses which discuss economic policy.

There is a broad interchange and overlap between the study of Economics and many other disciplines in the social sciences. Therefore students can create sequences between Economics and Geography, History, Political Science, Sociology and Mathematics. Those who have specialized in Economics very often pursue graduate work in either Economics or Business. It also provides solid training in such fields as Law or for entry into industry, the government or teaching.

English

The study of English attempts to engage the mind, imagination and sensibility of the student in the literature of the English-speaking world, and in related literatures, both classical and modern. The sequence of English literature, from its beginnings (about the seventh century) to the present, constitutes a continuous tradition that reflects the vitality of an entire civilization – its political, social, religious, scientific, and cultural life – and, in addition, presents a permanent record of the ways in which the human mind and imagination have responded to recurrent problems and situations. At the same time, each age gives rise to its own peculiar problems. The literature of the past and the literature of our own day can cast light upon the present and indeed upon the future. Literary studies can provide us with a fuller knowledge of ourselves and our world and with deeper insight into the nature of human experience.

More particularly, the undergraduate study of English in this University prepares the student for more advanced work in the discipline, appropriate standing in the English Language and Literature Programme qualifying the student, unconditionally, for graduate study in accredited universities of this country, of the United States and of the United Kingdom. In addition, it prepares its students for a Type A certificate programme for secondary-school teachers, particulars of which can be obtained from The College of Education, for work in journalism and in the publishing field, and for positions in business and in various departments of government.

French

Erindale College offers a dynamic, contemporary French programme designed to anticipate the needs of Canadian students. Canada's current consciousness of its bicultural heritage and willingness to explore avenues leading to bilingualism have greatly influenced our pedagogical aims and methods.

For students wishing to pursue a programme of study built on previous language training and leading to a high level of competence in French, we offer courses designed to achieve this aim. Our methods are based on the use of the most modern laboratory equipment coupled with student-faculty participation in conversational practice. In second and third years courses embracing the study of French as a language system are offered through theoretical and applied linguistics.

The study of French Literature has traditionally been closely related to the development of language skills. In our programme the student who is competent in the language is offered a wide range of literature courses. In these the student will become aware of the various critical approaches; historical, textual, esthetic, and will acquire an appreciation and understanding of French thought, art and culture. The skills thus developed will also be used to study French-Canadian literature and culture.

For non-specialists, Erindale offers a series of courses in which works are read in the original French and then discussed in either English or French, according to the choice of a particular section. These courses are available to students taking other disciplines who wish to enlarge their familiarity with one of the world's great literatures.

There is great flexibility built into the programme, with few pre-requisites or co-requisites for most courses. In special cases pre-requisites will be waived if a student can satisfy the instructor that he is able to undertake the programme.

Geography

Geography deals with the surface of the earth and with man's place on it. Throughout time, man's active curiosity about his environment has led him to explore the whole of the earth's surface and to locate and describe its various features and phenomena. Implicit in this curiosity is a desire to make use of the environment and to recognize and exploit its resources. Such knowledge, recognition, and use of environmental resources is basic to man's existence and governs the patterns of distribution of human populations and activities. Perhaps it is not too restrictive to say that the basic objective of Geography is to describe and explain the reciprocal relations of man and the environment, the results of which are given visible expression in the form and composition of the landscape.

Geography approaches its task in various ways. In common with the natural and social sciences it attempts to systematize or classify its data. It is interested in the nature of sequential changes in the landscape, but above all, it is interested in the spatial distributions, associations and interactions of terrestrial phenomena. It is recognized that many students may come to Erindale with little knowledge of

geography, while others will enter with a lively curiosity already sharpened and focused by an excellent high school experience.

Geography is offered at Erindale primarily as an interesting and important contribution to general education, and as a discipline worthy of study on its own merits. Geography may also be an approach to a worthwhile career.

Geography programmes are well established in Ontario Secondary Schools and there is a continuing demand for qualified teachers. Geographers also continue to find employment in many branches of Federal and Provincial Government service. Geographical training has proven useful in the fields of urban, regional and resource planning.

Students who may intend to specialize in Geography later are advised to elect at least two courses in Geography each semester. Members of the staff in Geography will be glad to advise students with respect to specialization in the discipline and about the courses which are most appropriate to their specific interests.

German

Through the media of language and literature undergraduate courses in German offer the interested student access to an important part of Western Civilization.

Language study includes phonetics, oral expression, translation and essay writing. Advanced audio-visual aids maximize the variety of material and the ease of learning while still allowing for personal student-instructor contact. Great care is taken to involve the language student with important issues of a social, political, scientific and cultural nature. This ensures a total and meaningful immersion in German culture and life for both the serious German scholar as well as others who require a reading knowledge only.

Ranking with the finest achievements of the human mind are the works of authors like Lessing, Goethe, Schiller, Holderlin, Novalis, Grillparzer, Heine, Keller, Hesse, Mann and Brecht. They form an illustrious gathering linking the literature of the German speaking countries to world literature.

Seven courses with a minimum of four literature courses will qualify the serious student for specialist standing in German.

History

A recent University of Toronto publication suggests that, *Every subject taught in a university has a social context. History, in particular, is relevant to the study of disciplines no matter how specialized. The study of History leads the student into the records of mankind. This past illuminates, although it may not directly guide, the conditions of the present. To have no interest in History is to have no interest in the present, no reasonable view of the future and no analysis of oneself.*

Both in response to a greater demand and a larger enrollment, Erindale College takes pleasure in announcing that its basic course in Western Civilizations will be supplemented by new offerings in Canadian, American and European history. This opportunity for concentrated work in specialized areas of interest will provide our

students with a more balanced programme, thereby giving them an opportunity to discover that History is not only a dialogue between past and present but, as has already been indicated, a tool for self understanding and further intellectual growth.

In addition, a history concentration can provide students with the requisite mental discipline and analytic skills for work in a variety of chosen fields, from teaching and the law to a career in the civil service and journalism.

Italian

Italian is a worthy and even indispensable aid to studies of other literatures, especially French, Spanish and English. "Exciting" may seem a trite adjective, but one can certainly be swept along by the study of the Renaissance in Italy. A first-hand study of Machiavelli's own writings will also serve to rescue him from standard misinterpretations, and reading Michelangelo's literary works will complete one's view of his over-all genius. And so one could continue from the beginnings of Italian literature to the present creative surge.

One can also mention the inherent beauty of spoken Italian with its vastly varying dialects from the top to the bottom of the "boot".

A fuller comprehension of the literary, linguistic, cultural and historical facets of Italian civilization is the goal of our programme of studies.

Graduates in Italian are in demand and will continue to be. Knowledge of another language and culture is regarded favourably by other disciplines and is frequently required for graduate-level studies. There are career opportunities in teaching, foreign affairs, trade and law.

Mathematics

There are many different motivations for the study of Mathematics. To the humanist, Mathematics is a part of the mainstream of human culture, and he is likely to regard his subject as an art. To the scientist or social scientist it affords analytical and descriptive devices which greatly illuminate theory. To the engineer and economist it is an important working tool. To the mathematician, it is an end in itself. Mathematics endeavours to provide courses to suit all of these viewpoints.

The professional mathematician is most likely to find employment in universities, in the civil service or in government laboratories, and in financially or technologically oriented business firms. Research positions require postgraduate study. Such fields as teaching, computing, applied statistics, and actuarial science offer opportunities for graduates. A training in Mathematics has traditionally been a strong preparation for careers in law and business; today it is also an excellent foundation for further work in a wide variety of fields in the science and social sciences.

The sequential nature of Mathematics means that pre-requisites are essential in most courses and that, as a rule, it is disastrous to fall behind in a course. In other words, good preparation and steady work are essential to successful completion of a mathematics course, and students without the one and/or unwilling to engage in the

other are advised to avoid the subject. Where pre-requisites are stated, they may be waived for students who can demonstrate adequate knowledge.

First year students with adequate preparation who want a substantial mathematics course either for its own sake or in conjunction with another field of study are advised to take MAT 135. All serious students should also take Mathematics 140E. The pre-requisite of XIII MAT B can be waived for very good students. The half courses, MAT 110EF and MAT 120ES are intended for students seeking less demanding courses. MAT 120ES affords an entry into Mathematics for the student who omitted or did poorly in XIII MAT A.

Philosophy

Philosophical problems are distinguished by their continuing fascination for the human mind and by their perennial elusiveness. But when even moderate progress is made, the impact upon the world of learning is often enormous. Revolutions in thought that shake the foundations of the existing sciences have occurred and exciting new disciplines have emerged. In addition, perplexing difficulties have been uncovered in the underpinnings of the natural and social sciences as well as in the presuppositions of morality, freedom, responsibility, religion and conventionally accepted values.

The role of the philosopher is that of Socrates, the self-styled "gadfly", who refuses to *play* your game but insists on examining it critically instead. He asks *why* you made that move, recommends alternative strategies, and may even question the value of the game itself. Socrates was the first philosopher-kibitzer and he was put to death.

We invite you to kibitz with us and acquire the tools and techniques necessary for the conceptual clarification and critical evaluation of the life and thought of the present and of past ages. Apart from the physical hazard mentioned above, a scrutiny of your own most cherished convictions and deeply-rooted beliefs may well blow your mind.

Physics

Physics was born of a desire to understand nature in a quantitative way. Guided by experiment and intuition, physicists arrive at mathematical relations among various concepts and these are then tested and extended by further research. The courses in physics are designed to help students both to understand and use the concepts and relations which have been developed and also to appreciate the need for continual questioning of widely-accepted views. The liberal arts student should gain insight into the nature of scientific investigation, while the science student whose interest is in sciences other than physics should acquire a back-ground knowledge which should lead to a deeper understanding of his own discipline.

The present programme in Physics at Erindale College employs the most up-to-date demonstration apparatus and undergraduate laboratory facilities. It has been designed

to meet these diverse needs. Students wishing to specialize in physics should consult a physics professor.

Political Science

The Political Science Programme at Erindale has two main goals. First, it aims to provide an introduction to the core aspects of the discipline – the nature of the political process, the structural-functional aspects of modern governmental systems, the essentials of political philosophy past and present, and modern analytical approaches to the study of politics.

Secondly, and in addition, the programme reflects a special emphasis on the field of international relations which is a distinctive feature of the Political Science curriculum at Erindale. This will allow for concentration on the many aspects of international politics such as the foreign policy process, international organizations, and international behaviour.

Psychology

Psychology, the science of behaviour, deals with the manner in which organisms, including man, perceive and react to the world in which they live. Psychology addresses itself to the mechanisms and dynamics by which we acquire our responses and adapt to the environment – both the physical and the social. Since behaviour is complex and multi-determined, psychology must concern itself with physiological and genetic events as well as those which are entirely experimental. Psychology is thus a bio-social science, which – in a more or less evolutionary or adaptive framework – examines at many levels social interaction, developmental changes throughout the life of the organism, the structure and organization of the senses, modes of perceiving and responding, the environmental events which shape our behaviour, the origins and implications of our drives and motivations, conflicts, emotions, and the wide variety of individual differences which are occasioned by differences in genetic endowment, physiological function and past experience. Because of the demands of science for rigor and objectivity, much emphasis is given to the techniques by which behaviour is studied; including the liberal use of animal investigation where it becomes virtually impossible to examine man himself directly to obtain answers. Extensive examination of a wide variety of experiments with humans and animals is paramount in all courses in psychology and forms the basis of theoretical discussion and generalization.

Religious Studies

Religious Studies, as an academic discipline, is based upon a recognition of the fundamental significance of religion for man and society. Its intent is to provide students with an opportunity to deepen their understanding of man and his institutions and to explore in various ways the ultimate questions and convictions which have affected the foundations of his life throughout history. Among the

perspectives and methods involved in the courses are those of History, Philosophy, Psychology, Anthropology, and Sociology.

Historically, man has expressed his profoundest convictions, questions, aspirations, and fears in many ways. His art, philosophy, conduct, social institutions, even his theories about the physical universe, have conveyed and illuminated his measure of himself and of the world in which he lives. From time to time these forms of expression coalesce within a particular pattern and tradition which we may identify as a "great" or a "world" religion, but along with such religions – both within them as well as outside them – are the individuals, each with his own personal convictions, values and interpretations of experience and of the symbols by which he represents to himself the ultimate concerns of life. The examination of all this constitutes the academic enterprise which we title Religious Studies.

Slavic Languages and Literatures (Russian)

Slavic Languages and Literatures offers a range of courses in Russian language and literature. There are courses suitable for inclusion in a wide variety of programmes of study irrespective of whether the student has studied Russian in Grade XIII or not. Some students may specialize intensively in Russian language and literature. Others may simply wish to gain a working knowledge of Russian to aid their reading of important material in another field, as, for example, science or social science. Language study in the Department emphasizes skills in using literary materials, and it also employs oral methods, combining small instructional groups with some laboratory or conversational practice.

Students who have not studied Russian in secondary school should not consider themselves at a disadvantage when considering specialization in the Russian or Slavic field.

Sociology

One of the essential questions sociologists have had to confront concerns the extent to which the individual is determined by society and to what extent he is a determinant of society. In examining such questions, sociologists use the methods of science as well as those of the humanistic disciplines. The answers are not self-evident and traditional explanations often prove unreliable, both as a source of understanding and as a guide to action. In these circumstances, sociology provides another approach for assessing existing knowledge and developing more valid theories of social behaviour and the nature of society.

Students who wish to pursue careers in other fields, may gain from the study of sociology a clearer understanding of the human and social condition as it relates to their chosen profession and to contemporary institutions in general. In Canada and abroad, the demand for professional sociologists is very great for teaching, research, administrative and consulting positions. A professional career in sociology, however, usually requires advanced training beyond the undergraduate level.

Spanish

It is hoped that students who study Spanish will strive toward a twofold goal: the first, to learn to speak, understand, read and write the Spanish language with ease; the second, to become familiar with the civilization and intellectual life of the Hispanic world through serious study of the artistic and literary phenomena of that world. Latin America, with hundreds of millions of Spanish speakers, should be of vital interest and concern to English-speaking North Americans. It is inevitable that Canada's ties and contacts with this area will increase as the 20th century draws to a close. Thus opportunities for persons well-trained in the Hispanic field should likewise multiply.

The programme of Spanish studies at Erindale College is designed to allow the student to pursue either of two streams of specialization. One would permit him to take a maximum of language courses with a minimum of literature; the other would reverse the process giving an opportunity for concentration in literature and culture with fewer courses in language. After the first year all courses, both literary and linguistic, are conducted in Spanish as much as possible in order to give the student maximum exposure to the language.

University 100

University 100 is a pilot project in educating first-year students at Erindale College. This new programme is the equivalent of *three* regular first year subjects. The enrollment will be limited to 100 students, with five instructors. The purpose of the programme, in the course of providing a general education is to give the student time to pursue his own interests and discover his talents. More specifically the students and staff will inquire into the common principles of thought and reasoning that underlie the traditional academic subjects. Emphasis will be placed on such skills as perceptive reading, the organizing and relating of data, and the drawing of correct inferences.

Under the general theme of *Myths and Models*, students and instructors will examine key works related to man's idea of himself and his civilization. The staff and students will examine such questions as, what are the personal and historical biases that control our conception of reality? How have changing interpretations of the nature of man and the world influenced actions and institutions? What views of human freedom are found in such authors as Plato, the Bible, Freud, and McLuhan? Within the general framework of the programme students will be expected to pursue independent work. The work will be conducted through small discussion groups and directed individual study. A wide variety of media will be employed, with a sparing use of formal lectures. Central to the concept underlying University 100 is the exercise of individual and group autonomy; many of the decisions about the conduct of the programme will be the responsibility of the students. Students and instructors will work together to develop a community of learning.

Two 2-hour seminars in groups of twenty and one session of the whole group of 100 students are planned for each week. The programme will give the student the

equivalent of 3 first-year credits and will prepare him to pursue specialized studies in most courses during his upper years. For further information, contact the registrar.

Abbreviations

For subject abbreviations see Page 20.

E Course given only at Erindale
F Half course – Fall term only
L Lecture hours
P Practical or laboratory work hours
P.I. Permission of Instructor
S Half course – Spring term only
T Tutorial hours
Y Half course – i.e. indicates a half-course given throughout both terms
/ means *or*
& means *and*
(I) may be taken by first year students

Availability of Courses to Other Years

"100" series courses are available to *ALL* years.

"200" series and "300" series courses are available to second and third year students.

If a "200" or "300" course is available to first year students the roman numeral (I) will appear in brackets under the course number. To take any such course the *permission of the instructor* (P.I.) is required.

ANTHROPOLOGY

ANT 100E **Introduction to Anthropology,** 2L,1P
A survey of the socio-cultural, pre-historic and biological aspects of man including the origin and development of *Homo-sapiens* and the cultural mechanisms that enable man to adapt to his environment.

ANT 201EF **Peoples of the Old World I,** 2L,1T
(I) Area to be announced.
Pre-requisite: P.I.

ANT 202ES **Peoples of the Old World II,** 2L,1T
(I) Area to be announced.
Pre-requisite: P.I.

ANT 204E **Social and Cultural Anthropology,** 2L,1T
(I) The comparative study of social institutions: the individual in society: contact between cultures.
Pre-requisite: P.I.

ANT 208ES **Folklore,** 2L,1T
(I) Oral tradition as a reflection ofculture, its role in society, and in the reconstruction of culture history. The collection and analysis of folk tales.
Pre-requisite: P.I.

ANT 209E **Tribal Religions,** 2L,1T
(I) The social implications of religious behaviour. Some basic concepts and techniques in tribal religions with discussion of selected world views. Religion and cultural dynamics. (See also REL 230EF)
Pre-requisite: P.I.

ANT 220EF **Archaeological Field Methods,** 2P
(I) Instruction in archaeological field techniques through excavation of a prehistoric site located near Erindale College and by laboratory instruction.
Pre-requisite: P.I.

ANT 221ES **Archaeological Laboratory Analysis,** 2P
(I) Analysis and description of archaeological material; primitive technology and archaeological interpretation.
Pre-requisite: ANT 220EF and P.I.

ANT 225ES (I) **North American Archaeology,** 2L,1P
A survey of culture history from the first appearance of man in North America until the coming of the Europeans. Selected readings will provide the broad outline; lectures will discuss dating, methods of analysis and offer detailed summaries of the evidence of selected sites and their interpretation to show how these contribute to the development of the total cultural picture.

ANT 226E (I) **Old World Prehistory,** 2L,1T
Survey of 2 million years of cultural development from the beginning of the Palaeolithic through Neolithic and early Bronze Age.
Pre-requisite: P.I.

ANT 304EF **Status and Role in Canadian Indian Society,** 2L,1T
An examination of variables in the acculturative situation, emphasizing individual research.
Pre-requisite: ANT 204E or P.I.

ANT 338EF **Primate Paleontology and Anatomy,** 2L,2P
A survey of the palaeontological evidence and the evolution of the order Primates, including the study of the soft and skeletal anatomy of representatives of different taxa of living primates. (See also BIO 250E and BIO 251E)
Pre-requisite: ANT 203E/P.I.

ANT 339ES **Human Adaptability,** 2L,1P
A survey of the nature and range of biological variation in modern man.
Pre-requisite: ANT 203E/P.I.

ANT 398E **Independent Reading**
Supervised study of selected anthropological topics.
Pre-requisite: P.I.

ANT 399E **Independent Research**
Supervised research in anthropology.
Pre-requisite: P.I.

ASTRONOMY

(See also Earth and Planetary Sciences)

AST 100 **Introduction to Astronomy,** 1L,1T,1P
A general survey of astronomy intended for First Year students as well as for generalists in higher years. The course contains a

descriptive treatment of the nature of solar and sidereal systems and the present conception of the structure of the universe.

AST 220 **General Astronomy,** 1L,1T,1P
A survey course in astronomy intended for specialists in science in the second or higher years. Emphasis would be placed on current developments as well as on the application of basic physics to astronomical problems.
Pre-requisite: PHY 110

BIOLOGY

BIO 100E **The Study of Life,** 2L,3P
Organized around three major abstract concepts: Time (Evolutionary Processes and Products), Energy (Its Procurement and Utilization by Living Organisms), and Information (The Organization of Living Systems). It presents an integrated study of life at four levels: molecular, cellular, organismal, and social; leading the student to an awareness of the five unique characteristics of living material, i.e. Organized Structure, Specialized Function, Growth and Development, Heredity, and Evolution. Practical sessions will introduce the student to a wide range of material and techniques. Recommended for all students considering subsequent courses in Biology.

BIO 110E **Field Biology,** 5P
A practical field and laboratory course designed specifically to acquaint the student with plants and animals in the local environment. In the field observation and recognition will be emphasized. Identification and collection techniques will be employed in the laboratory. A course in natural science of use to all biologists.

BIO 130E **Man and Environment,** 1L,1T,2P
The ecological problems confronting humanity are examined on both a local and a global scale. Attention is given to the population problem, pollution, the world food situation, and the current and projected status of resources. Divergent opinions as to the seriousness of present trends are presented by bringing in outside speakers (geographers, economists, engineers, ecologists, agronomists and politicians) and emphasis is placed on stimulating vigorous dialogue which the student will be encouraged to examine critically before taking up a personal position. Organized on a fairly informal seminar basis supplemented by field trips and opportunity is provided for each student to follow up topics of interest by undertaking individual projects.

JPZ 200E — *See Interdisciplinary Courses.*

BIO 230E **Ecology,** 2L,3P
The study of the relationships of plants and animals to environment. The composition, structure and function of natural ecosystems at the population, community and biosphere levels of organization. The quantitative and qualitative description of populations in terrestrial and aquatic environments and the influence of man on these ecosystems will be stressed.
Pre-requisite: BIO 100.
Co-requisite: BIO 110E recommended.

JBC 220E — *See Interdisciplinary Courses.*

BIO 240E **Genetics,** 2L,3P
A course presenting current concepts in genetics. Examples are drawn from microbes, plants, animals and viruses to illustrate: the molecular structure of the gene, mechanisms of gene action and gene regulation, levels of genetic organization in different life forms, basic population genetics, and genetical aspects of evolution. Practicals will include both plant and animal material and will involve carrying out both directed and independent experiments. Much of the laboratory work will involve *Drosophila.*
Pre-requisite: BIO 100/120.
Co-requisite: BIO 260E recommended.

BIO 241E **Cell Biology,** 2L,3P
Cell structure and function. Cell organization at the molecular and organelle level will be considered in bacterial, animal and plant cells. Topics include the structure of plasma membranes, nuclei, mitochondria, plastids and other organelles, and localization of the chemical reactions in these structures. In the laboratory, the student will become familiar with the current techniques and instruments of cell and molecular biology.
Pre-requisite: BIO 100/120 recommended.
Co-requisite: JBC 220E recommended.

BIO 250E **Structure and Evolution in Plants,** 2L,3P
Lectures, laboratory periods, field trips, and seminars are combined to give the student a knowledge of the major plant groups and their evolutionary relationships as inferred from morphology, anatomy, reproductive systems, and the fossil record. The course also provides

the student with an introduction to systematic theory. (See also ANT 338EF.)
Pre-requisite: BIO 100/120 or P.I.

BIO 251E **Animal Form and Function,** 2L,3P
The gross structure of vertebrate and invertebrate animals is considered in functional terms. Evolution provides a central theme. Lectures include such topics as, 'The analysis of animal movement' and 'The structure of sensory transducers'. Descriptive and experimental laboratory exercises provide a basic understanding of animal morphology.
Pre-requisite: BIO 100/120 or P.I.

BIO 252E **Developmental Biology,** 2L,3P
Processes of growth and development in plants and animals. Laboratories emphasize the descriptive embryology of the chick and the morphogenesis of plants and include techniques of tissue preparation. Differentiation, metamorphosis and regeneration are additional topics.
Pre-requisite: BIO 100/120.

BIO 260E **Biometrics,** 2L,1T,2P
Combines the roles of (a) a service course for students specializing in biological and social sciences, and (b) an introduction to biometric methods for those intending to pursue further work in mathematical biology. The first term comprises a review of commonly used statistical procedures, together with the models upon which they are based, while the second half is devoted to techniques in multivariate analysis.
Co-requisite: CSC 108Y recommended.

BIO 320E **Plant Physiology,** 2L,3P
Study of principle physiological processes of plants and the influence of environmental factors on these processes. Topics will include: water relations, mineral nutrition, translocation, photosynthesis, respiration, general metabolism, growth and development.
Pre-requisite: BIO 100/120 and CHM 120.

BIO 321E **Animal Physiology,** 2L,3P
A comparative approach will be taken in the study of physiological processes in animals. Topics will include respiration, excretion, osmoregulation, ionic regulation and the physiology of muscle and nerve.
Pre-requisite: BIO 100/120 and CHM 120.

BIO 322ES **Ethology,** 2L,3P
The behavior of lower vertebrates and invertebrates. Topics include chemical, visual and acoustic communication, animal orientation and navigation, aggression, mating and social behavior. Genetic, hormonal and neurophysiological aspects of behavior are discussed. Projects will be assigned involving both laboratory experimentation and library research.
Pre-requisite: BIO 100/120.

BIO 330E **Plant Ecology,** 2L,3P
The relationships of plant species, populations and complexes on the sociological, environmental and physiological levels. Practical field work and laboratory studies and experimentation is included. Provides a basis for practical training in conservation and environmental quality research.
Pre-requisite: BIO 223E & BIO 218E recommended.
Co-requisite: BIO 110E recommended.

BIO 331E **Animal Ecology,** 2L,3P
Comparative studies of a variety of aquatic and terrestrial habitats will be made both in the field and in the laboratory at the organism, population, community and ecosystem levels of organization. Natural history, population dynamics, energy flow and simple models will be used in describing the role of animal, mainly invertebrates, in the environment.
Pre-requisite: BIO 218E and BIO 223E recommended.

BIO 370E **General Microbiology,** 2L,3P
Historical development of microbiology; structure and ultrastructure of microorganisms; physiology and nutrition of bacteria; growth and cultivation of bacteria; classification of bacteria; nature of viruses; bactriophage and a limited survey of animal viruses and their properties; microorganisms in medicine, industry and agriculture; basic concept in immunology; a limited survey of microbial genetics; microbial ecology.
Pre-requisite: BIO 100/120.
Co-requisites: CHM 245S, JBC 220E/BIO 241E.

CHEMISTRY

CHM 120E **Basic Concepts of Modern Chemistry,** 2L,1T,2P
Current knowledge of the electronic structures of atoms and molecules is used to understand the Periodic Table and theories of chemical

bonding. Introduction to organic chemistry. Elementary concepts of chemical thermodynamics and their application to chemical equilibria. Reaction kinetics and chemical reactivity in relation to structure and mechanism.
Pre-requisite: XIII CHM and MAT A (Those without XIII CHM may be allowed to take this course by P.I.)
Co-requisite: MAT 135 & PHY 110 recommended for those intending to specialize in chemistry.

CHM 220E **Chemical Statics and Dynamics,** 2L,1T
Elementary quantum mechanics with special emphasis on rotors and vibrators. Principles and applications of electronic, vibrational, rotational and magnetic resonance spectroscopy. The second and third laws of thermodynamics. Kinetic molecular theory and elementary statistical mechanics. Reaction kinetics and its application to the elucidation of reaction mechanisms. (This course should be taken by all students intending to pursue a Specialist Programme in Chemistry.)
Pre-requisite: CHM 120.
Co-requisite: MAT 235E/MAT 244F & APM 246SE.
PHY 211E recommended.

JBC 220E — *See Interdisciplinary Courses.*

CHM 235EF **Introduction to Organic Chemistry,** 2L,4P
A brief introduction to bonding and structure. The synthesis and reactivity of the major types of organic compounds. Spectroscopic methods for structure determination. The laboratory, and the associated tutorial programme, deals with theory and practice of both synthetic and analytical techniques. (As well as constituting part of the chemistry core programme, this course would be essential preparation for students intending to proceed to studies in medicine or dentistry.)
Pre-requisite: CHM 120.

CHM 236ES **Introduction to Inorganic Chemistry,** 2L,4P
Bonding and structure of transition metal complexes; physical and spectroscopic methods applied to structure determination; thermodynamics of the solid state. The laboratory, with an associated programme of tutorials, will incorporate the study of fundamental techniques in both synthetic and analytical inorganic chemistry. (Required for Specialist Programme in Chemistry.)
Pre-requisite: CHM 235EF

CHM 245S **Chemistry of Natural Products,** 2L
A brief treatment of many important classes of biologically important, naturally occurring organic compounds. Each group of compounds will be considered from the standpoint of structure, properties and synthesis and among the types of compound considered will be terpenes, steroids, alkaloids, carbohydrates, amino-acids and proteins and nucleic acid components. Chemically less well-defined groups of compounds such as vitamins and antibiotics will also be discussed. Useful preparation for students interested in certain III year Biology courses as well as those interested in Organic Chemistry.
Pre-requisite: CHM 235EF

CHM 320E **Physical Chemistry,** 2L,4P
A more advanced course in physical chemistry covering statistical mechanics, quantum mechanics, collision theory and reaction kinetics in more mathematical detail. There will be a 7 hr. lab. on alternate weeks. The students will undertake 1 or 2 major projects during the year. (Should be taken by all students intending to pursue a Specialist Programme in Chemistry.)
Pre-requisite: CHM 220, MAT 235/244F and APM 246ES.
Co-requisite: MAT 335, PHY 311 recommended.

CHM 330E **Inorganic Chemistry,** 2L,4P
The chemistry of the non-transition elements will be discussed largely from the point of view of halides, oxides, and hydrides. Some coverage of specific aspects of individual elements or groups of elements will be included. The emphasis will be largely on descriptive chemistry, but also with correlations to be drawn between chemical properties and structure and/or bonding. Some stress will be laid on the means for determining physical properties and structure.
Pre-requisite: CHM 221.

CHM 340E **Organic Chemistry,** 2L,4P
The stereochemistry of organic compounds in relation to their physical and chemical properties, and to the factors affecting rates of reaction. Mechanistic aspects involved in organic synthesis. The application of both stereochemical and mechanistic considerations to the synthesis of polyfunctional organic compounds in both lecture and laboratory. Carbon compounds containing nitrogen, sulfur, silicon and phosphorus. Should be taken by all students intending to pursue a Specialist Programme in Chemistry.
Pre-requisite: CHM 221.

CHM 350EY **Instrumental Methods in Chemistry,** 1T,3P
Designed to provide an appreciation of the scope and limitations of some of the more widely used techniques of instrumental analysis. A range of instrumental experiences will be available to allow the student to direct his training according to his interest and/or future requirements. (Biology, Earth and Planetary Science and Physics students would find this course useful.)
Pre-requisite: CHM 120 & CHM 221.
Co-requisite: CHM 235EF & 236ES if CHM 221 not already taken.

CLASSICS

(*See also* PHL 211F *and* PHL 212S)

LAT 100 **Introductory Latin,** 4T
Designed to acquaint the student with the essentials of the Latin language and to introduce him to Roman Literature.

LAT 120S **The Poetry of Catullus,** 3T
Selections from the work of Catullus, including both his love poems and his satiric epigrams. Concentrates on the literary value of Catullus' work. Includes study of the Latin language.
Pre-requisites: XIII Latin & Latin 123F.

LAT 123F **Cicero and Roman Oratory,** 3T
Reading of Cicero Pro Caelio. This speech, which deals with a cause celebre in the circle of Catullus, will be studied for the light which it sheds on social life at the end of the Roman Republic and to illustrate Cicero's skill as an orator. Includes study of the Latin language.
Pre-requisite: XIII Latin.

LAT 223E **Virgil I,** 3T
Reading and study of selected works (*Ecloques*, *Georgics*, *Aeneid*).
Pre-requisites: *Latin* 120S & Latin 123F and P.I.

LAT 320 **Virgil II,** 3T
Pre-requisite: LAT 220E

GRK 100 **Introductory Greek,** 4T
An introduction to the study of the ancient Greek language, and the reading of Greek prose.

GRK 120S **The Wanderings of Odysseus,** 3T
Homer; *Odyssey* 6, 9, 11. Further study of language.
Pre-requisite: XIII Greek or Greek 100.
Co-requisite: Greek 122F.

GRK 122F **Socrates on Trial,** 3T
Plato; *Apology* of Socrates. Further study of language.
Pre-requisite: XIII Greek or Greek 100.
Co-requisite: Greek 120S.

GLL 200 **Greek and Roman Drama,** 1L,2T
A study of selected plays: Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Plautus, Terence and Seneca.

GRH 100 **Greek and Roman Civilization,** 2L,1T
Its political, economic and cultural evolution, beginning in an age of independent city-states, reaching rich maturity in the Hellenistic age of Great Powers, and culminating in the multiracial and multicultural Roman empire.

GRH 211F **Alexander the Great,** 2L,1T
The career and achievement of Alexander; his personality, policy and aims; his place in history. Involves the use of the original sources in translation.
Pre-requisite: P.I.

GRH 213S **Constantine the Great,** 2L,1T
The Roman empire at the end of the third century; paganism and Christianity and their conflict; the career of Constantine; the effects of his work on the Church, the State and Europe.
Pre-requisite: P.I.

GRH 313 (I) **The Julio-Claudian Emperors,** 2L,1T
A topic course best suited to senior students.
Pre-requisite: P.I.

EARTH AND PLANETARY SCIENCES

(*See also* Astronomy, Geography & Physics)

EPS 100E **Elementary Geonomy,** 1L,1T,2P
An introduction to the properties and behaviour of the Earth, including sea-floor spreading, continental drift, and an outline of world geology and regional geophysics.

EPS 210E (I) **Introduction to Planetary Materials,** 1L,1T,2P
An introduction to the materials of the solar system emphasizing the physical and chemical principles and the tools of mineralogy, petrology and ore geology.

Pre-requisite: Grade XIII CHM.
Co-requisite: EPS 100E.

EPS 220E **Evolution and Geochronology,** 1L,1T,2P
An introduction to nucleosynthesis, the age of the earth, the origin of life and a survey of isotope geochronology and evolution.
Pre-requisite: Grade XIII Chemistry and (PHY 225FE & PHY 226SE).

ECONOMICS

ECO 100 **Introduction to Economics,** 3L,1T
A survey course with emphasis on the basic concepts in macro and micro economic theory and international trade. The techniques economists use to analyze problems. The concepts introduced will include: national income and its determination; monetary and fiscal techniques; business cycle theory; the derivation and use of supply and demand schedules; the theory of the firm and the principles of comparative advantage and tariff protection.

ECO 200 **Microeconomic Theory,** 2L,1T
The microeconomic theory of pricing; the determination of prices through the interaction of the basic economic units; the household as consumer and the business firm as producer; the role of the pricing system as the mechanism by which social and individual decisions are made in a capitalist economy. Applications of the theory are examined.
Pre-requisite: ECO 100.

ECO 202E **Macroeconomic Theory,** 2L,1T
A detailed discussion of the theory of output, employment and the price level; of the techniques available for achieving economic stability; of central banking and Canadian financial institutions and markets, and of foreign-exchange markets.
Pre-requisite: ECO 100.

ECO 207 **Economic History of Europe,** 2L,1T
An analysis of the patterns of economic transformation in Europe from the Roman Empire to the Industrial Revolution with emphasis on intertemporal causal relationships.
Pre-requisite: P.I.

ECO 221 **North American Economic History,** 2L,1T
An examination, through the use of rigorous economic concepts of the growth patterns of the United States and Canada. The theme of the course is an attempt to explain the lags in Canadian development, as compared to the American model.

ECO 225E **Intermediate Economic Theory,** 2L,1T
A continuation of macro and micro economic theory designed to develop a sufficient theoretical basis for more specialized courses in applied theory and policy. The first term introduces further discussion and a critical assessment of the elements of Keynesian economics. The second term analyzes the theory of imperfect competition and includes a critique of the traditional theory of the firm. (Not offered in 1970–71.)
Pre-requisite: ECO 100.

ECO 228E **Contemporary Economic Problems and Policy,** 2L,1T
Focuses on the application of theoretical concepts, many of which were introduced in Economics 100, *to* issues such as the economics of inflation; federalism; rehabilitation and job-training; poverty and discrimination; international monetary reform; and underdeveloped countries and foreign aid.
Pre-requisite: ECO 100.

ECO 324 **Economic Development,** 2L,1T
Emphasis is on the economic conditions of low-income countries and the prospects for their economic transformation. Frequent reference will be made to specific issues affecting the nations of Africa, Asia and Latin America.
Pre-requisite: ECO 225E.

ECO 328 **International Economics and Policy,** 3L
An analysis of the nature, effects and policy implications of international trade and finance. The theories of comparative costs and reciprocal demand; factor reward equalization; balance of payments and foreign exchanges; international tariffs; liquidity; customs unions; and relevant topics related to current problems in international economic affairs.
Pre-requisite: ECO 225E or P.I.

ECO 336 **Public Finance,** 2L,1T
The construction of an economic theory of government to explain the determination of the budget and to provide an economic rationale for government intervention; an analysis of changing patterns of expenditure and revenue of federal and provincial government; the development of criteria for the evaluation of expenditure programmes and the tax structure; the problems and techniques of fiscal stabilization.
Pre-requisite: ECO 225E.

ECO 346E **Senior Seminar in Economics,** 2L
A research seminar. Students undertake one or more substantial research papers under close supervision.
Pre-requisite: ECO 225E and P.I.

ENGLISH

(*See also* PHL 210S *and* JLP 220F)

ENG 108 **Forms of Twentieth Century Literature,** 3L
Five of the following novels: Conrad, *Heart of Darkness*; Lawrence, *Sons and Lovers*; Woolf, *To the Lighthouse*; Hemingway, *Farewell to Arms*; Fitzgerald, *The Great Gatsby*; Waugh, *A Handful of Dust*; Faulkner, *Light In August*; a more recent novel to be selected. Five of the following plays: Shaw, *Major Barbara*; O'Casey, *Juno and the Paycock*; O'Neill, *Long Day's Journey into Night*; Williams, *The Glass Menagerie*; Fry, *The Lady's Not For Burning*; Osborne, *Luther*; Pinter, *The Caretaker*; Albee, *Who's Afraid of Virginia Woolf?*; a play to be selected. Three of the following poets, Yeats, Frost, Eliot, Williams, Auden, Dylan Thomas, Stevens, a younger poet. Additional works may be selected.

ENG 152 **Canadian Literature in English,** 3L
Selections from The Book of Canadian Prose (ed. Smith); Moodie, *Roughing It in the Bush*; Callaghan, *More Joy in Heaven*. Four to six additional novels. Selected poetry and short fiction. Recommended reading: *Canadian Anthology* (ed. Klinck and Watters, 2nd ed.); supplementary texts may be selected.

ENG 212 **Shakespeare,** 3L
(I) A study of at least ten plays.

ENG 218 **Major American Authors,** 3L
(I) Study of a number of American authors – no fewer than four and no more than six – chosen from different periods and so as to suggest something of the range of American Literature. At least four authors drawn from the following list: Hawthorne, Melville, Whitman, Twain, James, Stevens, Eliot, Faulkner.

ENG 220 **Varieties of Prose Fiction,** 3L
(I) A study of various forms of prose fiction from different periods of English Literature.

ENG 230 (1) **Varieties of Drama,** 3L
Approximately twenty plays from different historical periods and genres.

ENG 240 (1) **English Poetry,** 3L
A study of various forms, themes, styles and traditions.

ENG 304 **English Poetry and Prose, 1600–1660,** 3L
Selected poetry of Donne, Jonson and their successors. Milton. Prose by writers such as Bacon, Browne, Burton, Milton, Traherne.
Fulfills specialization requirement.

ENG 306 **English Poetry, Prose and Drama 1660–1800,** 3L
A special study of the works of Dryden, Swift, Pope, and Johnson. Pepys, selections from *The Diary* (Torchbooks); Addison and Steele, Selections from *The Tatler* and *The Spectator* (recommended edition, R. J. Allen, ed. Rinehart Editions); Horace Walpole, selected letters; Boswell, *The Life of Samuel Johnson*; Wycherley, *The Country Wife*; Congreve, *The Way of the World*; Gay, *The Beggar's Opera*; Sheridan, *The School for Scandal*; selections from *English Prose and Poetry, 1660–1800* (Rinehart Editions).
Fulfills specialization requirement.

ENG 308 **Romantic Poetry and Prose,** 3L
Blake, Wordsworth, Coleridge, Byron, Shelley, Keats for special study; brief selections from other poets of the period such as Crabbe, Scott, Landor, Clare; Wordsworth, *Preface to Lyrical Ballads*, *Preface to the Edition of 1815*; Coleridge, *Biographia Literaria*; Shelley, *Defence of Poetry*; Keats, selected letters; selected writings of Lamb and Hazlitt.
Fulfills specialization requirement.

ENG 312 **Chaucer,** 3L
A study of *Troilus and Criseyde*; selections from *The Canterbury Tales* and other works.
Fulfills specialization requirement.

ENG 324 **Fiction, 1832–1900,** 3L
At least twelve works, including one or more by each of Dickens, Thackeray, Trollope, Emily Brontë, George Eliot and Hardy.
Fulfills specialization requirement.

ENG 328 **Modern Novel,** 3L
At least fifteen works chosen from the period 1900–1945 including

one or more by each of the following: James, Conrad, Joyce, Lawrence, Faulkner.
Fulfills specialization requirement.

ENG 338 **Modern Drama,** 3L
Wilde, *The Importance of Being Earnest*; Shaw, *Major Barbara, Heartbreak House, Saint Joan*; Synge, *Riders to the Sea, The Playboy of the Western World*; O'Casey, *The Plough and the Stars* and a later play; Eliot, *Murder in the Cathedral*; Yeats, *On Baile's Strand, Purgatory*; O'Neill, *The Emperor Jones, Long Day's Journey into Night*; Williams, *A Streetcar Named Desire*; Miller, *Death of a Salesman*; Beckett, *Waiting for Godot*; Osborne, *Look Back in Anger*; Pinter, *The Caretaker*; Albee, *Who's Afraid of Virginia Woolf?* Three plays chosen from the work of *three* of the following: Pinero, Maugham, Galsworthy, Wilder, Fry, Dylan Thomas, Simpson, Arden, and a Canadian dramatist. Additional reading: plays by Ibsen, Chekhov, Strindberg, Pirandello, Brecht, Sartre, Ionesco.
Fulfills specialization requirement.

ENG 348 **Modern Poetry,** 3L
Intensive study of various forms of modern poetry.
Fulfills specialization requirement.

FRENCH

(*See also* PHL 210S *and* PHL 215F)

FRE 100 **Tragic Literature,** 1L,1T
A study of the tragic mode in selected novels and plays. Texts studied in the original French but students may choose lectures and tutorials conducted in *either* French *or* in English. Does *not* fulfill specialization requirement.
Pre-requisite: Reading knowledge of French.

FRE 120 **Introduction to University Studies,** 2L,1T,2P
A language course with special emphasis on oral expression: work includes language practice, phonetics, grammar, composition and language laboratory work. Selections from contemporary French Literature will also be included for study and discussion.
Pre-requisite: XIII French.

FRE 140 **Modern French Literature,** 1L,1T
Specific texts in 19th and 20th century poetry, novel and drama. A practical introduction to techniques of literary criticism and analysis.
Pre-requisite: XIII French.
Co-requisite: French 120.

FRE 142 **Man and Society in Fiction,** 1L,1T
Contemporary French and French-Canadian novels providing an introduction to critical studies in Fiction.
Pre-requisite: XIII French.
Co-requisite: French 120.

FRE 200 (I) **Comic Literature,** 1L,1T
The comic mode in selected novels and plays. Texts studied in the original French. Students may choose lectures and tutorials conducted either in French or in English. Does *not* fulfill specialization requirement.
Pre-requisite: Reading knowledge of French.

FRE 271 **Language Practice,** 2L,1T,2P
A continuation of French 120, including grammar, composition, oral, vocabulary, pattern drills, language laboratory work, and practical phonetics.
Pre-requisite: French 120.

FRE 290 **Independent Study**
Individual work with a member of staff on a literary or language topic of common interest, including readings, discussions, papers. Students may study two topics, each counting as one half of the course.
Pre-requisite: French 120 and P.I.

FRE 300 **French Realism and Idealism,** 1L,1T
A study of realistic and idealistic tendencies in selected examples of French fiction, theatre and poetry. Texts studied in the original French. Students may choose lectures and tutorials conducted either in French or in English. Does *not* fulfill specialization requirements. (Course not offered 1970–71.)
Pre-requisite: French 100/120/200.

FRE 328 **Symbolism and Surrealism,** 1L,1T
Specific texts will be studied, with emphasis on the main period of the movement. (Course not offered 1970–71.)
Pre-requisite: French 120.

FRE 330 **French Canadian Literature,** 1L,1T
Texts from different genres will be studied.
Pre-requisite: French 120.

FRE 342 **French Poetry,** 1L,1T
An introductory study, 1500–1950.
Pre-requisite: FRE 120.

FRE 352 **Drama from 1600–1800,** 1L,1T
Specific plays from the period dealing with aspects of comedy, tragedy and social drama.
Pre-requisite: FRE 120.

FRE 354 **Drama from 1800–1950,** 1L,1T
Continuation of FRE 352 with emphasis changing from Classical theatre to the evolution leading to modern theatre.
Pre-requisite: FRE 120.

FRE 362 **Prose Fiction from 1600–1800,** 1L,1T
Specific texts from the period designed to illustrate the variety of approaches to the novel taken by leading French authors.
Pre-requisite: FRE 120.

FRE 364 **Prose Fiction from 1800–1950,** 1L,1T
Continuation of FRE 362 with emphasis shifting to "Modern" period.
Pre-requisite: FRE 120.

FRE 371 **Language Practice,** 2L,1T,2P
A continuation of FRE 271, designed to advance the student's competence in written and spoken French.
Pre-requisite: FRE 271.

FRE 372 **The Structure of Modern French,** 1L,1T
The study of the phonological, morphological and syntactical systems of contemporary French: and introduction to French linguistics. Recommended to students preparing for a teaching career in French language and literature. (See also JLP 200EF.)
Pre-requisite: FRE 120.

FRE 374 **Introduction to Stylistics,** 1L,1T
Deals with contemporary spoken and written French.
Pre-requisite: FRE 120.

FRE 390 **Independent Study**
Individual work with a member of staff on a literary or language topic of common interest, including readings, discussions, papers. Students may if they wish arrange to study two topics, each of which will be considered as constituting one half of the course.
Pre-requisite: Any French course over 200 and P.I.

FRE 428 **Contemporary French Literature,** 1L,1T
The study of the novel and theatre since circa 1950 with special reference to *le nouveau roman* and *l'anti-théâtre.*
Pre-requisite: Any French course over 200.

GEOGRAPHY

GGR 101EF **Introduction to Geomorphology,** 2L,2P
Gross morphology and clima-geomorphic regions of the earth. Rates of regional denudation in relation to climate, relief and rates of uplift. Qualitative introduction to the main types of erosional, transportational and depositional processes and their associated landforms. Weathering and mass movements. Fluvial processes. Glacial landforms. Marine landforms. Wind action. Introduction to some basic concepts of geomorphology such as relations of 'structure, process and stage', magnitude and frequency concept of erosion, and climate and landforms.

GGR 102ES **Introduction to Climatology,** 2L,2P
Atmospheric variables in time and space, fluxes and balances of radiation, heat and moisture; climatic regions. Relations of plants and animals to climatic phenomena.

GGR 103EF **Introductory Economic Geography I,** 2L,1T
An introduction to man's use of his environment for earning a living; interrelationships among areas of supply and demand for goods and services.

GGR 104ES **Introductory Economic Geography II,** 2L,1T
Principles of location of agricultural, manufacturing, and service industries.
Pre-requisite: GGR 103EF.

GGR 105EF **Cultural Geography I,** 2L,1T
The relations between human culture and the physical environment. Emphasizes the development of knowledge and techniques of resource utilization. (Not offered in 1970–71.)

GGR 106ES **Cultural Geography II,** 2L,1T
Contemporary patterns and problems of cultural phenomena. Population geography. Environmental pollution. Deterioration and conservation of the resource base. (Not offered in 1970–71.)
Pre-requisite: GGR 105EF/P.I.

GGR 201EF **Geographical Methods I,** 2L,2P
An introduction to geographical methods in field work, cartography and statistical interpretation of geographical data.
Pre-requisite: Any two half courses in GGR.

GGR 202ES **Geographical Methods II,** 2L,2P
More advanced instruction in Geographical Methods.
Pre-requisite: GGR 201EF.

GGR 203EF **Introduction to Urban Geography I,** 2L,2P
The principles of urban geography, embracing discussions about the distribution, form and function of cities.
Pre-requisite: Any two half courses in GGR.

GGR 204ES **Introduction to Urban Geography II,** 2L,2P
A series of studies of specific problems in Urban Geography.
Pre-requisite: GGR 203EF.

GGR 205EF **Geography of Canada I,** 2L,2T
An introduction to the Historical Geography of Settlement, the physical background and the patterns of commodity production and service industries.
Pre-requisite: Any two half courses in GGR.

GGR 206ES **Geography of Canada II,** 2L,2T
More advanced studies of regional problems in Canadian Geography.
Pre-requisite: GGR 205EF.

GGR 207EF **Principles of Geomorphology,** 2L,2P
Comprises a rigorous examination of the principles controlling the shaping of the surface features of the earth and the distribution of earth patterns.
Pre-requisite: GGR 101EF or P.I.

GGR 208ES **Problems in Geomorphology,** 2L,2P
More advanced and detailed examination of a number of important examples of geomorphological phenomena.
Pre-requisite: GGR 207EF.

GGR 301EF **Research Reading Course in Geography,** 1T
An advanced student may select a special field of geography and pursue a reading course in it under supervision of a member of the geography staff.
Pre-requisite: P.I.

GGR 302ES **Research Project in Geography**
An advanced student may elect a research project in his special field, carry on investigations and compile a research report under the supervision of the staff advisor.
Pre-requisite: GGR 301EF.

GGR 303EF **Man and Nature,** 2L, 1T
A reading and seminar course in which some of the themes introduced in GGR 106 will be explored further. Occasional lectures will be given but the main emphasis will be on seminar presentation and discussion.
Pre-requisite: GGR 106ES or P.I.

GGR 304ES **Transportation Geography**
Principles of transportation and land use; measurements of transportation networks and movements; transportation and economic development, past and present; contemporary transportation problems.
Pre-requisite: GGR 103EF and GGR 104ES.

GGR 305EF **Pleistocene Environments I**
The causes and consequences of the environmental changes of the Pleistocene. The approach taken will be an interdisciplinary one combining Geology, Geomorphology, Biogeography, and Climatology. Special attention will be given to the effects of glaciation in southern Ontario. Field work and laboratory analysis of deposits will be an integral part of the course.
Pre-requisite: GGR 101 & GGR 102ES/P.I.

GGR 306ES **Pleistocene Environments II**
Builds upon material covered in the first term and deals with specific topics from both the New and Old Worlds.
Pre-requisite: GGR 305EF.

GGR 307EF **Agricultural Geography I,** 2L,2T
Background discussions in agricultural origins, agricultural ecology, and the economic development of agriculture.
Pre-requisite: Any four half courses in GGR.

GGR 308ES **Agricultural Geography II,** 2L,2T
Special topics in agricultural geography and the examination of agricultural regions.
Pre-requisite: GGR 307EF.

GERMAN

GER 105 **Reading German,** 3T
Training in reading scholarly German for students with little or no previous knowledge of German and who find it desirable to improve their comprehension of the language. Does *not* fulfill specialization requirement.

GER 110 **Language Practice I,** 2T,2P
An intensive course in learning to write and speak German. Within the framework of this course the cultural background of the German speaking countries will be explored.
Pre-requisite: XIII GER or P.I.

GER 130 **Literature of the 19th and 20th Centuries,** 2L,1T,1P
Illustrates major trends in literature. Practice in Language learning.
Pre-requisite: XIII GER or P.I.

GER 210 **Language Practice II,** 2T,1P
An intensive course in learning to write and speak German for those students who are particularly interested in gaining an active command of the language.
Pre-requisites: GER 121/GER 140/P.I.

GER 220 **Literature of the Enlightenment and of Storm and Stress,** 2L,1T
A study of the works of the German *Aufklärung* and of the young Goethe, the young Schiller, and their contemporaries.
Pre-requisites: GER 121 or P.I.

GER 420 **Prose and Poetry; 1885–1945,** 2L, 1T
A consideration of significant writers in modern German Literature such as Nietzsche, Stefan George, Hofmannstahl, Thomas Mann, Rilke and Kafka.
Pre-requisite: GER 121 or P.I.

GER 422 **Contemporary Literature,** 2L,1T
An investigation of post-war trends in the literature of the German speaking countries from 1945 to the present day. Included are such authors as Günther Grass, Hans Magnus Enzensberger, Martin Walser, Wolfgang Borchert, Heinrich Böll, Paul Celan, Wolf Biermann, Erwin Strittmatter, Hans Erich Nossack, and others.
Pre-requisites: GER 240 or P.I.

HISTORY

(*See* PHL 301F, PHL 302S, SPA 340 and GRH courses)

HIS 100E **Europe and the World 1789–1969,** 2L,1T
Modern Europe from the French Revolution to the 1960's, with special emphasis on Europe's relations to other parts of the world. Political, economic, social and cultural aspects will be covered.

HIS 200E (I) **The United States 1607–1968,** 2L,1T
An introduction to American history, from the earliest colonial settlements to the present. Primary attention devoted to political developments, but economic, social and intellectual factors will also be examined.

HIS 201E **Canada 1663–1967,** 2L,1T
A survey of the political, social and economic history of Canada, topically treated, from 1663–1967.

HIS 202E **Spain,** 2L,1T
A general survey of the history of Spain: political, social, economic, and cultural.

HIS 203E **Latin America – Survey,** 2L,1T
The history of Latin America: political, social, economic and cultural. Special emphasis *may* be given to particular countries.

HIS 204E **Italy or Germany,** 2L,1T
A general survey of the history of Italy or Germany: political, social, economic and cultural.

HIS 300E **19th Century Britain,** 2L,1T
The major themes of British history from the late 18th century: the emergence of industrial society, the fate of aristocracy, religion, cultural and intellectual change; external relations, constitutional development and political history.

HIS 301E **Parties and Politics – Canada 1867–1967,** 2L
A specialized field in Canadian history.
Pre-requisite: P.I.

HIS 302E **Race and Ethnic Minorities in American History,** 2L
Concepts of nationality and race and the problems of assimilation and acculturation of the immigrant, the negro, the Indian in America's past.
Pre-requisite: P.I.

HIS 303E **International Relations 1870–1960,** 2L
The international relations of the European powers at their zenith and in decline. The economic and social framework – in Europe and the 'outside' world will be examined as well as the political conflict.
Pre-requisite: P.I.

HIS 304E **Special Area – Latin America,** 2L
Pre-requisite: P.I.

HIS 305E **Special Area – Modern Italy or Modern Germany,** 2L
Pre-requisite: P.I.

INTERDISCIPLINARY COURSES

CMM 220ES **Information Theory,** 2L
(I) Fundamentals of information theory. The effect of technological developments on communications past, present and future. Communications among the lower animals. Sociological implications of communications and mass media. (See also PHL 222S, PSY 375EF, SOC 320S.)

DRA 200E **Drama Through Acting,** 2L,3P
(I) Practical work in acting and producing plays as a means of understanding and interpreting drama. Approximately four plays taken from different areas of drama. Lectures and seminars will also be held on the plays chosen and their background.
Pre-requisite: P.I.

JBC 220E **Chemical Biology,** 2L,3P
The physical and chemical properties of biological molecules and the application of physical chemical principles to biological systems. Topics will include the structure of biological macromolecules and methods for the determination of structure, energy transfer mechanisms and the properties of enzymes including the kinetics of enzyme reactions.
Pre-requisite: BIO 100/120 and CHM 120
Co-requisite: CHM 235EF recommended.

JLP 200EF **Semantics and Linguistic Theory,** 2L
The structure and function of natural languages and the traditional division into semantics, syntactics and pragmatics. We focus on syntactics and especially Chomsky's generative grammar and some of its philosophical implications. See also PHL 219S.

JPZ 200E (I) **Population Regulation Mechanisms,** 2L
Seminars covering the behavioural and genetic aspects of population regulation. Students present papers and lead discussions on selected topics. Emphasis will be on mammals and insects.

UNI 100 **Myths and Models,** 2L,4T
Methods of thought and learning in the modern world and other places and times. Contemporary problems caused by rapid changes in the modern world require a re-appraisal of traditional methods of learning and understanding. To do this is to examine the myths and models that underlie existing knowledge and to compare them with those of other cultures and ages. This course which occupies 3/5 of a student's programme will investigate the methods of traditional disciplines and the relationships among them by providing the opportunity for concentrated study within a flexible structure that will enable the individual student to pursue interests in depth.
NOTE: Open only to first year students.

ITALIAN

ITA 100 **Beginning Italian,** 4L, 1P
Grammar, translation, oral work, with a view to providing basic conversational and writing skills.

ITA 160EY **Italy – a Young Nation?,** 1L
A nation in name only since 1861, is it really a nation in fact as well? What is the Italy of the twentieth century; of the 1960's? Where does Italy stand culturally, intellectually, artistically? These questions will be raised and examined by viewing a series of Italian films (Fellini, Visconti, Antonioni, Rossellini, etc.) and by reading selections in English from some of the more provocative contemporary authors.

ITA 201E (I) **Continuing Italian,** 2L
A comprehensive review of Italian grammar that will develop the student's power of expression through composition and translation of literary passages of interest. Italian will be used as much as possible in class.
Pre-requisite: ITA 100/XIII ITA or P.I.

ITA 202E (I) **Italian Short Stories,** 2L
The short story ("novella"), so vitally important throughout Italian literature, should both interest and delight. Selections include "novelle"

by Boccaccio, some authors of the Renaissance, and Verga, Buzzati, Moravia, and others.
Pre-requisite: ITA 100.

ITA 300E **Italian Literature,** 2L
A survey of Italian Literature from its beginnings to approximately 1700. It serves as an introduction to the poetry and prose, and the types and styles of Italian literature. Dante, Petrarch, Boccaccio, Machiavelli are some of the authors to be discussed. Recommended as background preparation for all other Italian literature courses.
Pre-requisite: ITA 200E.

ITA 301EY **The Modern Italian Novel,** 1L
Svevo, the novelist from Trieste who was discovered by James Joyce, will be the first of a series of novelists to be studied. Others will include Pirandello, Silone, Vittorini and Moravia.
Pre-requisite: ITA 200E.

ITA 302EY **The Italian Theatre from the Futurists to the 1960's,** 1L
The germ of the present-day French theatre of the absurd is to be found in the earlier Teatro Grottesco with its dramatists such as Rosso di San Secondo and Chiarelli. Their influence on Pirandello is indisputable. Italian drama and comedy continue to surprise, depress or elate, with works by Betti, Fabbri and De Filippo.
Pre-requisite: Italian 200E; also open to students taking Italian 201E.

ITA 303EY **Italian Poetry in the 20th Century – Crisis and Rebirth,** 1L
The decadentism of Pascoli and D'Annunzio had left Italy, traditionally a land of poets, stagnating in its own tradition. The search to revitalize Italian poetry began with the urge to "tell it like it is". The result was an exciting rebirth which has continued to flourish, whether through the work of the better known Saba or Quasimodo or of the post-war poets like Sereni, or the still more recent neo-Marxists such as Fortini.
Pre-requisite: ITA 200E; also open to students taking ITA 201E.

ITA 310E **The Divina Commedia of Dante,** 2L
Dante's *Comedy* has been translated into many languages and many times into English. Its influence is well known and continues in the twentieth century through Ezra Pound and T. S. Elliott and even Le Roi Jones.
Pre-requisite: ITA 200E.

ITA 311EF **The Decameron of Boccaccio,** 2L
A concentrated study of Boccaccio's major work in its entirety, and his "novelle". He was, as well, a writer of literary theory, criticism and philosophy.
Pre-requisite: ITA 200E.

ITA 313E **Petrarca e petrarchismo,** 2L
Why has Petrarch's poetic influence been felt by so many writers of so many countries (i.e. Ronsard in France, Garcilaso in Spain, Donne in England, Hooft in Holland, Bärglio in Sweden, etc.)? We will seek to answer this question by a study of Petrarca in his prose as well as in his *Rime*, and of other Italian poets influenced by him: Poliziano, Lorenzo, Tansillo, Marino, etc.
Pre-requisite: ITA 200E.

ITA 321E **The Italian Epic in the Sixteenth Century,** 2L
Ariosto's *Orlando furioso* and Tasso's *Gerusalemme liberata* influenced such famous writers as Cervantes, Spenser, Milton and Montaigne. The reasons will appear after a detailed study of the two works, each having similarities and differences in spirit and substance. Ariosto writes of women, knights, arms, loves and wild adventures, and Tasso declares his intent to treat of a spiritual cause but has difficulty restraining his sensual self. (Not offered in 1970–71.)
Pre-requisite: ITA 200E.

ITA 340EY **Creative Italian,** 1L
Assumes you have mastered the basic rules and are ready to play the game. An advanced language course which goes beyond the mechanics of translation. A more subtle and flexible knowledge of Italian and of the means of self-expression are the purposes of this course.
Pre-requisite: ITA 200E.

ITA 370E **What is Romanticism in Italy?,** 2L
This is a fundamental problem in Italian Studies, since the Romantic era is not as clearly defined as in French or in German literature and, in fact, is quite confusing. Thus, we will try to find an answer or answers by concentrating on Foscolo, Leopardi and Manzoni and by looking at minor figures, and historical background.
Pre-requisite: ITA 200E.

ITA 390ES **Verga e la tristezza faticosa del vivere,** 2L
The novels and short stories of Giovanni Verga, Sicilian and Italian, whose characters endure the hopelessness of life.
Pre-requisite: ITA 200E.

ITA 399ES **Pirandello: Life vs Form,** 2L
Although Pirandello died in 1936, the dramatization of his conception of life which aroused controversy when first presented is still disturbing. Much of today's theatre can be traced to Pirandello's influence.
Pre-requisite: ITA 200E.

MATHEMATICS

MAT 110EF **Introductory Calculus,** 2L,2T
Intended for students who did not take or did poorly in XIII MAT "A". Differentiation and integration of elementary functions with applications.

MAT 120ES **Finite Mathematics,** 2L,2T
Introduction to probability, linear programming, game theory, Markov. chains.
Pre-requisite: XIII MAT A/110EF.

MAT 135 **Calculus and Linear Algebra I,** 2L,2T
Differential and integral calculus of algebraic and elementary transcendental functions.

Vectors in two and three dimensions with applications to geometrical problems, to the kinematics of a particle, and to the differential geometry of curves.

Introduction to real vector spaces and linear mappings including matrices and the solution of systems of linear equations.

Introduction to complex numbers.
Pre-requisite: XIII MAT A (75% or better).

MAT 140E **Abstract Mathematics,** 2L,2T
1. Introduction to the notions of topology. Convergence with particular emphasis on continuity and limits of functions of a real and complex variable. Sequences and series.
2. Introduction to the concepts of abstract algebra. Rudiments of logic.
Pre-requisite: XIII MAT A & B.

MAT 224ES **Set Theory,** 2L,1T
Naive set theory, paradoxes and their resolution through formalization and axiomatization. This is the same course as PHL 330S.
Pre-requisite: PHL 206F.

MAT 235E **Calculus and Linear Algebra II,** 2L,1T
Mean value theorem, convergence, vector spaces, orthogonality, vector calculus.
Pre-requisite: MAT 135.

MAT 244F **Differential Equations,** 2L,1T
Ordinary differential equations of first and second order. Solution by series and integrals. Systems of first order, linear differential equations. Applications to physical problem.
Pre-requisite: MAT 135.

MAT 325 **Geometry,** 2L,1T
Euclidean, inversive, projective, affine, non-Euclidean geometries and the relevant groups of transformations. The treatment is not restricted to real geometry. (Not to be offered in 1970–71.)
Pre-requisite: MAT 140E.

MAT 335E **Analysis,** 2L,1T
More vector calculus together with complex variable, residue calculus, special functions, boundary value problems.
Pre-requisite: MAT 235.

MAT 345 **Algebra,** 2L,1T
Groups, rings, modules, unique factorization domains, fields, finite fields, Wedderburn's theorem on semi-simple rings, the classical groups.
Pre-requisite: MAT 140E.

MAT 354Y **General Topology,** 2L,1T
Sets and cardinals, Schroder-Barnstein, metric spaces, topological spaces, continuous maps, product quotient and subspaces, separation axioms, connectedness, compactness, Tychonoff, paracompact spaces, partitions of unity, mapping spaces (C-O topology), completion of metric spaces, normal linear spaces, duality.
Pre-requisite: MAT 235.

MAT 399Y **Mathematical Essay**
The student will prepare under the supervision of an adviser an essay or a mathematical topic not covered in another mathematics course at Erindale. The work is to be at an advanced level, and, while no new results are expected, the development and presentation must be the student's own.
Pre-requisite: Acceptance by an adviser.

STA 232 **Introduction to Statistics,** 2L,1T
Elements of probability theory, common distributions, point and interval estimation, standard significance tests, introduction to least squares and analysis of variance.
Pre-requisite: MAT 135/(110EF & 120ES)

STA 332F **Experimental Design,** 2L,1T
The statistical aspects of collecting and analzing experimental data, analysis of variance, orthogonal designs.
Pre-requisite: STA 232.

STA 342S **Regression Analysis,** 2L,1T
Regression theory with applications to the analysis of non-orthogonal data.
Pre-requisite: STA 332F.

PHL 206F (I) **Modern Symbolic Logic,** 2L,1T
See PHL 206F for a description of this course.

APM 246ES **Applied Mathematics I,** 2L,1T
Vectorial mechanics of particles and rigid bodies. Problem in waves. Introduction to lagrangian dynamics.
Pre-requisite: MAT 244F.

APM 351E **Applied Mathematics II,** 2L,1T
Pre-requisite: APM 246ES.

CSC 108Y **Computer Programming,** 1L,1T
Algorithms and flow charts. An introduction to stored-program computers and Fortran programming. Elementary applications in data processing, scientific calculations, non-numerical problems, and simulations.
Pre-requisite: P.I.

CSC 248Y **Programming Languages and Applications,** 1L,1T
The syntax and semantics of various programming languages, including both algebraic and symbol manipulation languages; data structures; numerical and non-numerical applications. See JLP 200EF.
Pre-requisite: CSC 108Y.

PHILOSOPHY

PHL 100 **Introduction to Philosophy,** 2L
An introduction to a wide range of representative and important

philosophical problems and topics, including the following: whether moral standards are relative, whether human beings are free or determined; the nature and cogency of various arguments for the existence of God. Topics in semantics, formal logic and scientific method will also be discussed with a view to avoiding certain common errors in reasoning.

PHL 204S **Contemporary Social Issues,** 2L
Civil disobedience, conscientious objection and revolution, their nature and justification, are the main issues explored. The views of contemporary social critics and philosophers on these and related themes are analyzed and assessed in conjunction with the writings of Lenin, Thoreau, Gandhi, King, and Marcuse. (See PHL 224F.)

PHL 205S (I) **Philosophy of Religion,** 2L
What is the nature of religious belief and is it justifiable? In attempting to answer this and related questions we study primitive religion, three Eastern religions (Confucianism, Taoism, and Buddhism), the ontological argument for the existence of God, the Freudian critique of religion, and the relationship between science and religion. (See REL 230.)

PHL 206F (I) **Modern Symbolic Logic,** 2L
Symbolic logic provides precise and efficient techniques for analyzing and evaluating informal arguments in areas such as law, science and politics. Indispensable for the design of complex computer circuits. Designed to enable the student to acquire basic skills in manipulating symbolic logic formulas and to gain some knowledge of the powers and limitations of formal systems.

JLP 200EF—*See Interdisciplinary Courses.*

PHL 208F **Aesthetics,** 2L
What is a hoax? How does one distinguish between a *genuine* work of art and a sham or a hoax or a fraud? In dealing with these questions light is shed on traditional puzzles in a wide range of art forms and media. Students who wish to concentrate upon one particular art form such as literature or music are encouraged to do so.

PHL 210S **Philosophy in Literature,** 2L
Man's nature, his relation to his fellows and his place in the universe are all themes that have received significant literary and philosophical attention. Several major works of literature are examined with a view

to clarifying and evaluating the philosophical doctrines they reveal and reflect. The authors and works considered vary somewhat depending upon student interest but include at least some of Camus, Brecht, Golding, Sophocles, Dostoevskii, Tolstoy, Kafka.

PHL 211F (I) **Greek Philosophy I: Plato and his Predecessors,** 2L
Is morality merely an instrument in the hands of those who control the state? In answering this question Plato sketches the first account of a utopian society and deals with every important philosophical problem: the subjectivity of perception, the nature of knowledge, the relation between mind and body, the conventionalism or relativism of morality. Plato is the first major philosopher and his influence has been enormous.

PHL 212S (I) **Greek Philosophy II: Aristotle and Later Greek Philosophy,** 2L
Aristotle, like his teacher Plato, must be numbered among the great philosophers of all time. His work in science and philosophy determined the development of these subjects during the middle ages, and became an integral part of Western culture. We examine his main doctrines and trace their influence, and those of Plato, upon later thinking in the ancient world.

PHL 213F **Early Modern Philosophy I: Seventeenth Century Thought,** 2L
The seventeenth century was the great formative era of modern philosophy, marked by the decline of mediaeval conceptions and the rise of modern science. Under the influence of the newly-emerging world-view, philosophers in this "age of reason" developed original analyses of knowledge and certainty, appearance and reality, freedom and necessity, mind and matter, deduction and experiment. Hobbes, Descartes, Spinoza and Locke are examined in some detail and others to a lesser extent. (See PHL 214.)

PHL 214S **Early Modern Philosophy II: Eighteenth Century Thought,** 2L
The philosophers of this "age of enlightenment" developed further the insights of their predecessors. Berkeley is noted for his subtle and ingenious arguments whereby he establishes an immaterialist philosophy on empiricist principles. Hume is the major British philosopher and is renowned for his skeptical attacks upon established beliefs and doctrines. Kant, the major German philosopher, has been a most powerful influence dominating the thought of the nineteenth century. Other philosophers of the time are examined to a lesser extent.

PHL 215F **Introduction to Existentialism and Phenomenology,** 2L
The writings of Sartre and Camus have helped make existentialism

the most widely discussed philosophy of the present day. Existentialism derives in part from the work of phenomenologists such as Husserl who first stressed the philosophical importance of detailed and accurate descriptions of mental states and processes. The technique of phenomenological analysis have been used by existentialists to provide a general description of the human condition – that relation between essence and existence which is peculiar to man. Both existentialism and phenomenology are analyzed and evaluated in this course. (See PHL 320s.)

PHL 217s **Introduction to the Theory of Knowledge, 2L**
Can we know anything for certain and, if so, what? Claims to know have been powerfully challenged by philosophic skeptics. We examine among other things the problem of skepticism, the scope and limits of human knowledge, the subjectivity of perception, rationality, and theories of truth. (See PSY 367EF.)

PHL 219s **Philosophy of Language, 2L**
Deals principally with philosophical problems of the meaning and use of linguistic expressions and theories of truth. The work of Chomsky, Wittgenstein, Tarski and others on these topics provides the basis for classroom discussion.
Pre-requisite: JLP 200EF recommended.

PHL 220EF **Philosophical Psychology, 2L**
Are some problems in psychology fundamentally conceptual in nature and not amenable to solution by means of the experimental method? Modern philosophical techniques of conceptual analysis are introduced and used to throw light on this question and others that arise where philosophy and psychology overlap. Problems about the emotions receive special attention.

PHL 222s **The Analysis of Propaganda, 2L**
A philosophical examination of various techniques of persuasion including psychological warfare, indoctrination, brainwashing, and advertising. Topics include the emotive use of language, persuasive definitions, informal fallacies, the ethical presuppositions of propaganda, and the relevance of contemporary analyses of morality to propaganda wars. The material examined includes black power literature, student protest literature, and Quebec separatist documents, as well as classical works such as the Communist *Manifesto* and Mill's *Utilitarianism*. (See CMM 200ES.)

PHL 224F **Introduction to Value Theory,** 2L
A philosophical examination of value concepts in the light of recent work in the social sciences, especially economics. What is the role of values in the explanation of behaviour, in deliberation and decision making? What is the dynamics of value-change? Are values relative? One major problem examined is that of formulating public policies on the basis of individual values and preferences.

PHL 300S **Philosophy of the Social Sciences,** 2L
Topics and issues include: patterns of explanation in the social sciences; objectivity and values; relations of social science with natural science and philosophy; methodological problems peculiar to social science; the roles of mathematics, models, and formal theories in social science; behaviourism in psychology and its conceptual underpinnings. (See PHL 224F & 204S.)
Pre-requisite: Two courses in the Social Sciences.

PHL 301F **Philosophy of History I,** 2L
The concepts, presuppositions, methods and types of arguments used by historians are analyzed and assessed. Among the questions examined are these: What is the role of general laws in historical explanation? Can history be objective? Is history determined? Do historical explanations differ from scientific explanations? Is history without value-judgments possible?
Pre-requisite: Two courses in History or Philosophy.

PHL 302S **Philosophy of History II,** 2L
A more thorough examination of topics studied in PHL 301F, together with new and related topics.
Pre-requisite: PHL 301F.

PHL 303S **Philosophy of Science,** 2L
The nature of scientific explanation, reduction of one theory to another, the relation between confirmability and falsifiability, conceptual change and scientific revolutions, philosophical problems of space and time, and the existence of theoretical entities.
Pre-requisite: One course in Science or Mathematics.

PHL 316F **Nineteenth Century Philosophy,** 2L
Traditional philosophical paths of reasoning and subject matter are abandoned in this most explosive and revolutionary period of thought. Philosophers like Hegel, Marx, Kierkegaard, Comte and Nietzsche bring in new concepts such as the effect of history on philosophy,

theories of dialectical materialism, existentialism, sociology, evolution and the influence of culture. Here began the trends which lead up to many of the philosophical dilemmas of our own day.
Pre-requisite: Three courses in Philosophy. (PHL 214S recommended.)
(Not offered in 1970–71)

PHL 317S **Twentieth Century Philosophy,** 2L
A survey of some main trends in contemporary philosophy. The course covers influential contributions to the fields of logical analysis, linguistics and science. Among the more important figures studied are Russell, Moore and Wittgenstein. Other recent philosophical systems are also considered.
Pre-requisite: Three courses in Philosophy.

PHL 320S **Problems of Existentialism and Phenomenology,** 2L
A more thorough examination of themes studied in PHL 215, together with discussion of more recent developments in the application of the phenomenological method in such areas as the social sciences.
Pre-requisite: PHL 215F.

PHL 330S **Set Theory,** 2L
The course covers naive set theory; an introduction to the paradoxes, and their resolution through axiomatization and formalization. This course is the same as MAT 224ES.

PHL 331S **Minds and Machines,** 2L
Can machines think and feel? Are human beings simply very complicated bio-chemical devices, perhaps of a sort that future technology may be able to simulate? We deal with these questions in the light of recent research and discussion on the possibilities of simulation of intelligence and purposive behaviour.
Pre-requisite: PHL 206F/CSC 108Y.

PHL 332F **Theory of Games, Decisions and Social Choice,** 2L
A formal and systematic treatment of conflicts of interest making use of the modern mathematical approach of game theory. Topics covered are utility theory, two-person zero sum games (games in which one person's gain is the other person's loss), non-co-operative and co-operative games, decision making under uncertainty, social welfare functions for group decision-making, games of survival and of fair division, and problems of majority rule.
Pre-requisite: One of PHL 206F, MAT 120SE/MAT 140E recommended.

PHL 333S **Problems in Conflict Resolution,** 2L
An investigation into the scope and limits of rational methods for resolving conflicts; The logic of violence, conflict and compromise; questions regarding the morality of war and nuclear strategies.
Pre-requisite: PHL 224F/PHL 300s.

PHYSICS

PHY 110 **Introductory Physics for Science Students,** 2L,2P
For specialists in physics, students majoring in biological science or Arts students wishing to do calculus and physics concurrently. The subject material includes elementary mechanics, properties of matter, electricity and magnetism, light, atomic physics, special relativity. Provides a survey of many fields of physics from the modern point of view.
Pre-requisite: XIII PHY & XIII MAT A. Those without XIII PHY may take this course on P.I.
Co-requisite: MAT 135 recommended.

PHY 211E **Thermal Physics,** 2L,1T
Thermodynamics and an introduction to statistical physics.
Pre-requisite: Physics 230E.

PHY 223E **Electronics,** 2L,2P
An introduction to electronics and to modern applications of transistor and tube circuitry to various areas of scientific investigation.

PHY 230E **Advanced Electricity and Magnetism and Physical Optics,** 3L,2P
Mandatory for students wishing to specialize in physics. It may also be used as a Second Year terminal course for biology students, or students of the Humanities. A vector calculus treatment of electricity and magnetism, an introduction to wave theory and physical optics.
Pre-requisite: Physics 110.
Co-requisite: MAT 235E.

PHY 310 **Quantum Physics,** 2L
An introduction to quantum mechanics with selected applications in atomic and nuclear physics.
Pre-requisite: Physics 230E.
Co-requisite: APM 246 ES.

PHY 311 **Mathematical Physics,** 2L
A discussion of generalized mechanics, rigid body motion and

Lagranges equations; selected topics in mathematical physics such as heat flow, vibrations, diffusion, etc.
Pre-requisite: Physics 230E.
Co-requisite: APM 246 ES.

PHY 312 **Introduction to Electromagnetic Theory,** 2L
Discusses Maxwells equations, electromagnetic waves and their applications in optics, radiation theory and the elements of wave guide theory.
Pre-requisite: Physics 230E.
Co-requisite: APM 246 ES.

PHY 313 **Advanced Physics Laboratory,** 3P
Selected experiments in optics, atomic and nuclear physics, etc.
Pre-requisite: Physics 230E.
Co-requisite: Physics 310.

POLITICAL SCIENCE

POL 100 **Introduction to Canadian Politics,** 2L,1T
The political process in Canada, including Canadian political culture, the formation of public opinion, political behaviour, political parties, the constitution, federalism, French Canada, federal-provincial financial relations, and the structure and functioning of political institutions, such as the cabinet, parliament, the judiciary, and the public service.

POL 101 **Introduction to Political Science,** 2L
An examination of political practices, concepts, and institutions as they have developed in the western world.

POL 200 **Political Theory,** 2L
The development of political thought from the dialogues of Plato to the controversies surrounding the French revolution. Among the theorists examined are Aristotle, Machiavelli, Hobbes, Locke and Rousseau.

POL 203 **Politics and Government of the United States,** 2L
The first term concentrates on the evolution of the American constitution with particular reference to individual rights, federalism and governmental powers. The second term deals with the actual operation of government through the workings of politics and administration; it covers executive-legislative relations, parties, pressure groups, the bureaucracy, and foreign affairs.

POL 204 **Politics and Government of the U.S.S.R.,** 2L
An introduction to the domestic politics and foreign relations of the U.S.S.R., with emphasis on the post-Stalin era. The initial phase will be taken up with the political history, political culture, and institutions of the U.S.S.R., and with a consideration of alternate approaches to the study of Soviet politics. Detailed attention will then be given to the Soviet policy process in both domestic and external affairs. Although the stress will be on internal politics, roughly a quarter of the course will be devoted to external affairs and the impact of external events and foreign policy considerations on the Soviet domestic scene will be emphasized throughout.

POL 205F **Politics and Government of the United Kingdom,** 2L

POL 304E **British Politics,** 2L
A study of the institutions and processes of the British system.

POL 306 **International Relations,** 2L
A study of politics among states in the international system stressing the sources of power and the attempts to resolve conflict.

POL 328 **International Organization and International Law,** 2L
International organization and international law as instruments for conflict resolution in the system of international states.

POL 329S **Marxism & Leninism,** 2L

POL 400F **Twentieth Century Political Thought,** 2L

POL 408 **Science & Government,** 2L

POL 414S **Politics of Communist East Europe,** 2L
An area study course with particular emphasis on problems of regional integration and the influence of ideology and the Soviet Union.

POL 430E **Workshop in Political Science,** 2L
A seminar for specialists in political science, with an orientation and structure dependent on the interests of available students and faculty.
Pre-requisite: POL 100 or 101.

PSYCHOLOGY

Psychology 100 is a full year course strongly advised as a pre-requisite for all other Psychology courses. Instructors in all subsequent courses

will assume the student has the background knowledge provided by this course.

PSY 100 **Introductory Psychology,** 3L
Surveys various areas of contemporary psychology, its methods, problems and current status.

PSY 200F **Statistics and Research Design I,** 3L
Basic descriptive and inferential statistics. Topics will include frequency distributions, measures of central tendency and variability, correlation, elementary probability and simple statistical inference. Knowledge of high school algebra is assumed.

JPZ 200E — *See Interdisciplinary Courses.*

PSY 201S **Statistics and Research Design II,** 3L
Concerned with the design of experiments and methods of statistical analysis. Topics will include chi-square, the analysis of variance, and regression analysis. Knowledge of basic statistics is assumed.

PSY 203F **Social Psychology,** 3L
A survey of contemporary areas of research in social psychology. Areas to be considered include social perception, attitudes, interpersonal relations, group processes, and ethnic attitudes.

PSY 204S **Personality,** 3L
Examination of theory and research related to personality development with emphasis on research in the self concept, need for achievement, anxiety, authoritarianism, etc.

PSY 205F **Differential Psychology,** 3L
Genetic and environmental bases of individual differences in intelligence and personality, including consideration of developmental variables, family, sex, class and race differences.

PSY 208F **Sensory and Perceptual Processes,** 3L
Examination of theoretical and experimental efforts aimed at understanding sensory and perceptual function. Emphasis will be placed on vision research at both the physiological and behavioural levels. (Not to be offered 1970–71.)

PSY 209S **Biological Foundations of Behavior,** 3L
The relationship of neural and biochemical information to the study of behaviour. The biological events underlying behavioural phenomena will be explored.

PSY 210S **Individual Research**
May be taken by students wishing to pursue *either* a laboratory research project *or* a specifically designed program of readings. Either choice will be conducted under the supervision of a staff member, whose approval will be required prior to enrollment. A course of this nature is designed for students desiring either research experience or a more detailed exploration of a specific topic of psychological interest. May be taken for either a half course or full course credit.
Pre-requisite: P.I.

PSY 211S **Motivation,** 3L
Theory and research devoted to the variables underlying the energizing and direction of behaviour. Both physiological and psychological motivation will be explored. (Not to be offered in 1970–71.)

PSY 212EF **Animal Learning,** 3L
Phenomena of classical and instrumental conditioning in mammals, particularly the white rat. The phenomena of acquisition, generalisation, discrimination, and partial reinforcement will be examined from both an empirical and a theoretical point of view. (Not to be given in 1970–71.)

PSY 213EF **Comparative Psychology,** 3L
Innate and learned behavioural capacities of a variety of animals from simple one-celled organisms to man. Emphasis will be placed on understanding both the similarities and the differences in modes of behavioral adaptation at different phylogenetic levels.

PSY 214S **Human Learning and Memory,** 3L
Facts, theories, and methods in the study of human learning. Major emphasis will be on recent trends in the study of verbal learning, memory and verbal behaviour. (Not to be offered in 1970–71.)

PSY 215EF **Developmental Psychology,** 3L
The examination and analysis of the development of organisms. Both animal and man will be studied with reference to genetics, maturation and early experience.

PSY 216ES **Experimental Design and Theory,** 3L
The logical structure of psychological theories; problems involved in the design of experiments; the interpretation of experimental findings. Practice in the critical evaluation of experimental designs and the correction of experimental errors.

PSY 326ES **Abnormal Psychology,** 3L
A survey of theories and research in psychopathology and psychotherapy with special emphasis on social learning theory and behaviour modification techniques.
Pre-requisite: P.I.

PSY 351ES **Laboratory in Human Learning,** 1L,2P
Experiments in human learning and memory will be discussed and performed. Conditioning, verbal learning, memory, concept learning, perceptial-motor skill learning, and problem solving.
Pre-requisite: 200F & 201S are recommended.

PSY 352EF **Laboratory in Animal Learning,** 1L,2P
Supervised demonstration experiments designed to familiarise students with the methods of collecting, analysing, and reporting data in psychological experiments *employing animal subjects* for the study of learning.

PSY 353ES **Laboratory in Sensory and Perceptual Processes,** 1L,2P
The fundamentals of sensory and perceptual processes, chiefly visual. Students conduct weekly laboratory experiments, using each other as subjects. (Same as PSY 208S (1969–70).) Fulfills laboratory requirement for specialists.

PSY 362ES **Animal Behaviour and Ethology,** 3L
The examination and analysis of animal behaviour. Special emphasis on the study of the social interactions of animals in groups particularly as it relates to the animals' adaption to their environment.

PSY 364ES **Topics in Social Psychology,** 3L
Areas to be considered include communication, cognitive-physiological view of emotion, sociopathy, and theories of attitude change. Enrollment limited.
Pre-requisite: P.I.

PSY 367EF **Cognitive Processes,** 3L
A broad survey of the psychology of thinking. Problem solving,

concept formation, reasoning, psycholinguistics, computer simulation of thought and problems in the organization of behaviour and thought. (See PHL 217F.)

PSY 369EF **Child and Adolescent Psychology**
Examination of the relations between socialization and the myriad characteristics of adolescence, including cognitive processes, values, and interpersonal behaviour.

PSY 370EF **Theory of Psychological Testing,** 3L
The principles of psychological testing viewed in relation to existing tests. Technical topics include elementary measurement theory, reliability, and validity. Tests studied include intelligence tests, interest inventories, and personality scales.

PSY 375EF **Psychology and Communication,** 3L
Designed to explore critical relationships between psychological variables and the news media, politics, theatre, films, television, etc. Student research reports will become the focus of topical discussions. (Confrontation and open warfare of a non-violent nature will be accepted, if not actually encouraged.) Limited enrollment. (See CMM 200ES.)
Pre-requisite: P.I.

RELIGIOUS STUDIES

REL 200 (I) **Religious Traditions, East and West,** 1L,2T
The ideas, attitudes, and practices of the Judaic, Christian, Muslim, Hindu, Buddhist, Confucian, Taoist, and Shinto faiths. (See ANT 209E.)

REL 230EF (I) **The Roles of Religion,** 2L,1T
The positive and negative roles which religion has played and continues to play in human maturation and in the evolution of the universe. A general analysis of personhood authentic human living self-transcendence. The phenomenon of faith; religion as wonder; religion as meaning; and religion as health. (See PHL 205S.)

REL 250ES (I) **Teilhard de Chardin: His Impact on Modern Man,** 2L,1T
This course will examine the thought and spirit of Teilhard de Chardin as a Christian interpretation of the evolutionary theory. Creation, evil, sin, love, work, cosmic spirituality are pivotal issues, as well as Teilhard's relevance for 20th century man.

SLAVIC LANGUAGES AND LITERATURES

SLA 100 **Introductory Russian Language,** 4T,1P
Fundamentals of Russian Grammar. Practice in aural comprehension, speaking, reading, and writing. Language laboratory practice.

SLA 110E **Introduction to Slavic Culture and Literature,** 1L,1T
The historical development of Slavic culture, languages, and literatures from the beginning to the present. Readings (in translation) selected from all periods of Russian, Ukrainian, Polish, and other Slavic Literatures.

SLA 210 (I) **Nineteenth Century Russian Literature,** 2L,1T
Major literary currents in nineteenth century Russia; extensive readings (in translation) of the works of Pushkin, Gogol, Turgenev, Dostoevsky, Tolstoy, and others. Will be required to do a certain amount of reading in the original. SLA 100, SLA 220 required for specialists.

SLA 220 (I) **Intermediate Russian Language,** 3T,1P
Continued study of Russian with language laboratory practice, oral practice, composition, and conversation based on reading of literary texts and topics of current interest.
Pre-requisite: SLA 100.

SOCIOLOGY

(*See also* PHL 300s.)
Instructors in all 200-series or higher courses will assume that the student has the background knowledge provided by Sociology 104.

SOC 101 **Introductory Sociology: Study of Society,** 2L,1T
An introduction to the basic concepts, principles, and methods of sociology as a discipline for the study of society.

SOC 201 **Methods of Social Research,** 2L,1P
Sociological Enquiry, Theory and Practice. An introduction to the logic of research procedures, methods of collection, presentation and analysis of sociological data, including an elementary consideration of the methods of quantitative research.

SOC 202 **Structure of Interpersonal Relations,** 3L
Patterned relationships, social roles and social expectations which arise out of interaction among individuals.

SOC 205 **Urban Sociology,** 3L
Examines the city both as a significant development in world civilization and a working mechanism guided by contemporary policies and studies human behaviour in its multifaceted relations with the urban environment.

SOC 208E **Sociology of Deviance,** 3L
A sociological analysis of deviant behaviour which examines theories of its genesis, social definition, maintenance, control, and social consequences.

SOC 212 **Sociology of the Family,** 2L,1T
Development of the contemporary Western family with special emphasis on the changing relations among its members.

SOC 303 **Canadian Society,** 3L
An analysis of the changing structure of Canadian society.

SOC 304F **Industrial Sociology,** 3L
An examination of the impact of industrialization on social roles and institutions with special emphasis on problems arising from increasing automation and affluence.

SOC 310F **Race and Ethnic Relations,** 3L
Social processes involved in minority relations in terms of race and ethnicity and their social, economic, and political consequences.

SOC 312S **Population and Society,** 3L
An analysis of mortality, fertility, migration, and their relation to population, social structure, mobility, and social change.

SOC 313 **Sociological Theory,** 3L
The development of sociology and contributions of particular sociologists whose concepts not only have historical interest but also illumine the subject matter and method of contemporary sociology.

SOC 320S **Mass Communications in Canadian Society,** 3L
The development and impact of mass media on the society and culture of Canada with a focus on radio, film, and television. (See CMM 200ES.)

SOC 324F **Political Sociology,** 3L
The social basis of politics. Culture and social organization in their relation to power and its application.

SOC 326ES **Sociology as Strategy for Social Change,** 2L,1P
The utilization of the sociological imagination in achieving desired social change by active participation in groups committed to social change.

SOC 390EY **Individual Studies,** 3 hours/wk
Intensive research of a problem of special interest under the supervision of a member of the staff.
Pre-requisite: At least two Sociology courses and P.I.

SPANISH

SPA 100 **Beginning Spanish,** 3L,2P
For those who have had no previous background in Spanish. By the end of the year, students should have acquired sufficient knowledge of the written and spoken language to be able to specialize in Spanish. Emphasis will be placed throughout on the oral side of the work both in class and in the language laboratory.

SPA 140E **Spanish Civilization and Culture,** 2L
(In English.) Presents an overall view of the activities of the Spanish people from the early settlers of the peninsula to the current scene. Using the history of the country as a basic frame, the course will deal with the main currents of thought and the major accomplishments in literature, art, architecture and music. Visual presentations will frequently be used.

SPA 160E **Spanish American Civilization and Culture,** 2L
(In English.) Designed to give an understanding not only of the unique civilization of Latin America, but also of its serious social and economic problems. Deals with all of the major countries in Central America, the Caribbean and South America.

SPA 200 (I) **Conversation and Linguistic Study of Spanish,** 3L
Stresses idiomatic speech. Classes will include general conversation, short talks and reports on subjects of topical interest. One hour a week will be devoted to the study of Spanish phonetics and the major linguistic features of the language, both modern and historical.
Pre-requisite: SPA 100E/XIII SPA.

SPA 220 **Panorama of Spanish Literature,** 2L
From works of several periods and in a variety of styles, students will discover the mastery with which representative Spanish writers have

used the language to describe Spanish life and values. In the *second term* conducted almost entirely in Spanish.
Pre-requisite: SPA 100E/XIII SPA.

SPA 221 **Intermediate Grammar and Composition,** 2L,1P
Reinforces and refines the students' knowledge of Spanish to allow a greater range of expression and a broader understanding of the language.
Pre-requisite: SPA 100E/XIII SPA.

SPA 320 **Creative Spanish,** 2L
Conducted mainly in Spanish and designed to meet the needs of those who already have a good knowledge of Spanish. Methods used improve the students' style and ability to write and speak Spanish. Will include essay and letter writing, translation, conversation practice and oral reports.
Pre-requisite: SPA 120E.

SPA 343E **Literature of the Golden Age,** 2L
The gradual modification of Italian Renaissance influences through the undercurrent of persisting national traditions. Original texts – poetry, drama and novel – will be studied as reflecting one of Spain's most interesting and richest periods, comprising the 16th and 17th centuries. The course will be given mainly in Spanish.
Pre-requisite: One or more SPA 200-series courses.

SPA 340 **History of Spain,** 2L
Conducted in English. Designed for students interested in Spanish History from the time of the Romans to the present day. The invasions of the Visigoths and Moslems, the formation and collapse of the medieval kingdoms, the Habsburg and Bourbon dynasties, the Civil War, and the regime of General Franco. (See HIS 202E.)

SPA 376E **Spanish American Literature,** 2L
Designed to study literary works from the 16th century chronicles to modern writings. In the last decades, Pablo Neruda, Alfonso Reyes, Jorge Luis Borges, Miguel Angel Asturias, Vargas Llosa, Julio Cortazar are only a few of the many Spanish American writers universally read.
Pre-requisite: One or more SPA 200 series courses or equivalent.

SPA 446E **Contemporary Spanish Literature,** 2L
A survey of the evolution of the novel, drama and poetry, showing the

successive changes in form and content. The first half deals with the nineteenth century: the Romantic revolt against Neo Classicism and the development of Realism and Naturalism. The second half concentrates on the twentieth century: it will study the literary movement of the "Generation of 98", the upsurge of Modernism, focusing on the interaction between the two, and finally leading up to present day tendencies of social concern.
Pre-requisite: One or more SPA 200 series courses or equivalent.

SPA 420 **Composition**
Escribir y Traducir, an advanced stylistic and composition course.
Pre-requisite: SPA 320.

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UNIVERSITY OF TORONTO
SCHOOL OF BUSINESS

Graduate Programs in Business Administration, 1970-1971

MASTER OF BUSINESS ADMINISTRATION
DIPLOMA COURSE
DOCTOR OF PHILOSOPHY
EXECUTIVE PROGRAMS

TORONTO, ONTARIO, CANADA

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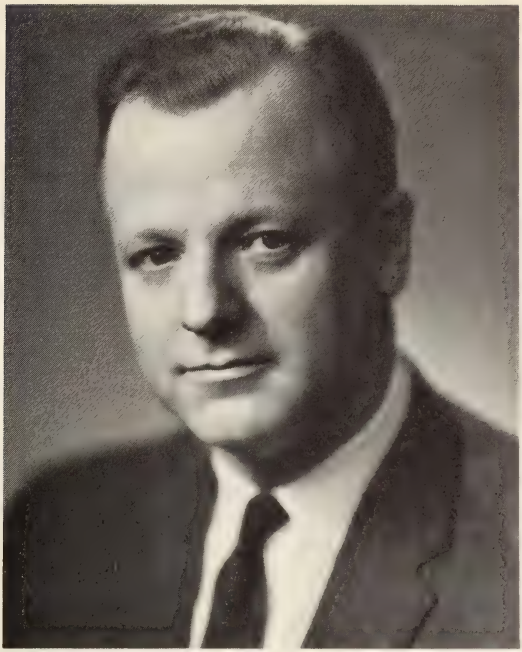


From the Director

The University of Toronto School of Business is a professional graduate school, which is an integral part of a great University with a tradition of excellence in teaching and scholarship. During the thirty one years since it first offered graduate education in business, the School has constantly adjusted its programs to meet the increasing challenges for education in administration.

The School offers three programs. The Diploma program is designed for those who wish a good grounding in administration. The Master of Business Administration program is a professional course providing rigorous training for managers of the future. The PH.D. program prepares candidates for teaching and research.

The growing complexity of business administration makes new demands for formal education, in addition to experience. The School has played a vital role in providing highly qualified graduates to meet these challenges.

O. W. Main

Humanities and Social Sciences Research Library

The University of Toronto is located in the heart of Toronto. Queen's Park, adjoining the Parliament Buildings and Government Offices of the Province of Ontario, belongs to the University and is ringed by University buildings. The campus is extensive, yet only a mile from the great business and financial centre of downtown Toronto.

The University, as the central provincial university of Ontario, is well into its second century as a degree granting institution. It is a dynamic federation of colleges, specialized schools, and institutes, with by far the largest enrolment of graduate students in Canadian universities.

The combination of traditional values in the University of Toronto with a changing physical environment is expressed in the new Humanities and Social Sciences Research Library, pictured on the opposite page. This building, under construction near the School of Business, will provide a new repository for one of the great libraries in North America.

The location of the School of Business on the campus brings to the graduate student all the advantages of being an integral part of a great university and of having ready access to one of the larger metropolitan centres with its leading business community.

THE SCHOOL OF BUSINESS

Objectives

The aim of the School of Business is to provide programs of professional education of high quality for selected graduate students. The School has a faculty of academic distinction with business experience who are committed to giving students individual attention and assistance in preparing themselves for careers in business organizations, public administration, or university teaching positions. Cross appointments with other university branches and close working relationships with a number of institutes on the campus give the programs added depth and flexibility.

The School of Business faculty is also active in research in the fields related to business administration. Students who show research promise are encouraged in projects which are frequently remunerative.

A variety of executive programs are organized for business managers who wish to keep informed on new management concepts and skills.

Philosophy and Techniques

The School is eclectic in approach to its business administration programs, choosing the best blending of a variety of instructional methods. Students participate in groups in lectures and classroom discussions, laboratory periods, seminars, and tours of industry. As individuals they are responsible for extensive readings, preparations for seminar discussions, case assignments, and research projects.

Management education is approached with thoroughness. Students examine the social, political, technological and economic environment of modern business. Theoretical concepts are integrated. Quantitative management tools, and computer applications, are learned. The student develops his ability to recognize imaginative opportunities and to identify basic problems in management situations. Relevant information sources are utilized.

The student formulates alternative approaches to situations, evaluates them, communicates and defends his position to peer groups, and gains experience in managerial decision making and implementation. Assignments in actual businesses give a tough realism to the training. In the end, the educated graduate is ready to move from high potential through experience to leadership in business administration.

Programs

Master degrees have been granted to the School's graduates by the University of Toronto since 1939. Many of these graduates are now achieving high places in the business world, confirming the School's emphasis on quality. The M.B.A. Program is a two-year course (except for honour commerce graduates). In the first year students make course choices leading to an M.B.A. degree in general management or in management science. The second year is undertaken in advanced studies partly selected from the same chosen field by the student for his own career interests.

The Diploma Program is a thorough one-year general course from which graduates of high standing may enter the second year M.B.A. Program. It may be taken either full-time or part-time in the day or part-time in the evening sessions.

The Doctoral Program leading to the PH.D. degree is being offered under full accreditation. This is a research and theory-oriented program that will assure a comprehensive background for students following careers in university teaching or in advanced staff positions in industry or government.

Executive Programs are tailored for managers up to the senior policymaking level in sessions of various durations. These are outlined in this calendar, and given in detail in separate brochures.

Location and Facilities

The School is located on the St. George Campus of the University of Toronto. Classes and seminars are held at 117–119 St. George Street (one-half block south of Bloor Street). The administrative office of the School, the School of Business Library, and faculty offices give a physical unity for close association of the students with the faculty.

The School of Business Library maintains a basic collection of books, pamphlets, periodicals and financial reports to provide ready access to material necessary for research and class work. The resources of the Main Library of the University, and of the Reference

Library of the Metropolitan Toronto Public Library, both nearb
are available to students.

Students will make use of the main computer of the Universit
with its large central processing unit served by terminals at th
School. This is one of the most comprehensive systems of its kin
in Canada, and offers an outstanding opportunity for training an
research. Several courses within the School's program require th
use of the computer; all students are required to gain some facilit
with computer programming.

FINANCIAL RESEARCH INSTITUTE

The School of Business is a member of this Institute, founded i
1967. Among its members are the major Canadian banks, insuranc
companies, trust companies, investment dealers and investmen
management companies, and non-financial corporations having spe
cial interests in financial markets. Central facilities of the Institut
at McGill provide access to computer stored COMPUSTAT financia
data and a number of DBS statistical series. Special conversationa
languages and programs have been and are being developed t
enable members to analyze these data. New data series are bein
added continuously. School of Business students have access to th
data and programs through a terminal located at the School.

Each summer the Institute employs several M.B.A. students wh
have shown an aptitude for research and an interest in finance i
their first year of the M.B.A. program. These students conduct re
search projects under the direction of the Institute's full-time staf
or its research-oriented members. Development and testing of finan
cial and economic models, the development of new uses for th
existing data series, and the acquisition of new data series ar
examples of projects. Professor W. R. Waters of the School of Busi
ness is Vice-President (Research) of the Institute.

THE CENTRE FOR INDUSTRIAL RELATIONS

The Centre for Industrial Relations is an independent research bod
that promotes studies in all facets of labour-management relations
It maintains an information service which provides a comprehensiv
source of industrial relations materials. In addition, the Centre spon
sors conferences and seminars to which students and faculty, as wel
as labour, management and government representatives are invited

The Centre provides a limited number of scholarships and re
search assistantships to students in Business, Law, Political Economy
and other departments from which it derives faculty interest and

support. Professor J. H. G. Crispo of the School of Business is the Director for the Centre for Industrial Relations.

INSTITUTE FOR THE QUANTITATIVE ANALYSIS OF SOCIAL AND ECONOMIC POLICY

This research institute (IQASEP) of the University of Toronto provides permanent facilities for the carrying out of quantitative research in the social sciences, including business, that complement the University's program of graduate training.

A number of graduate students in the School of Business and the Department of Political Economy work as part-time research assistants on Institute projects such as: the construction of an econometric model of the Canadian economy; a study of economics of scale in the major appliance industry; a study of Canada's ability to develop an independent economic policy, particularly tax policy; an analysis of the efficiency of the allocation of resources in higher education; a study of some aspects of unemployment insurance; and a study of the international transmission of business cycles.

Institute research associates run several workshops for graduate students which are designed primarily to assist doctoral students who are in the thesis-writing stage.

The Institute maintains a library of computer programs for regression and other statistical analyses, an economic time series data bank in computer-readable form, and computer programs for econometric models of the Canadian economy. These services are available to students in the School of Business who are associated with Institute workshops or research projects. Professor J. A. Sawyer of the School of Business is a member of the Institute's Executive Committee.

At the Institute of Computer Science, University of Toronto

HOUSING

The University of Toronto operates several apartment complexes primarily for married students. These modern housing units, adjacent to the campus, have self-contained recreational facilities, children's play areas, shopping mall and restaurant. (Two units on Charles Street are pictured below.) Write to the Housing Service, University of Toronto.

The Housing Service also maintains a listing of rooming houses, flats, apartments and homes. These are not subject to University regulations.

Single students may be accepted in residence in the various colleges of the University.

Rochdale College, on the edge of the campus but not officially connected with the University of Toronto, offers cooperative housing accommodations for single and married students. Inquiries about Rochdale should be directed to Rochdale College, 341 Bloor Street West, Toronto.

Tartu College, one block from the campus, offers suites for six persons. Each unit combines single occupancy bedrooms with common functional areas. Inquiries should be directed to Tartu College, 39 Prince Arthur Avenue, Toronto.

St. George Graduate Residence, operated by the University of Toronto, provides accommodation of three types for single students, men and women, registered at the University. It is located at 321 Bloor Street West, at the corner of St. George Street and half a block from the School of Business. Direct inquiries to The Warden, St. George Graduate Residence, University of Toronto.

PLACEMENT SERVICE

Prospective graduates in Business Administration find the University of Toronto Placement Service a clearing house for job opportunities and employer interviews. Employers from Toronto's extensive business and industrial community and from all parts of Canada offer a variety of employment opportunities to University of Toronto graduates, and particularly to those of the School of Business.

The Placement Service maintains files of job openings and applicants, gathers information on prospective employers, and has a trained staff ready to advise on these matters. The Service forms a contact between the student and business or governmental organizations. It arranges a series of interviews, which continue through the fall and winter months, where employer representatives can meet students seeking suitable employment upon completion of their graduate work.

STUDENT ACTIVITY

Graduate Business Club

The Graduate Business Club is the student organization of the School of Business and is open to all students. Through their own organization, students actively participate in social, athletic and academic programs.

As part of orientation week, the Graduate Business Club organizes several functions to allow students to meet each other and the faculty on a social basis. Details of the School's program for the coming year, faculty assistance in course selection, and the informal "information services" of returning students are available to new registrants during that week.

The Graduate Business Club organizes a variety of social events throughout the years such as 'smokers,' dances, ski-day and dinners. Through one of the dinners held, the students are brought into contact with the Alumni. The School boasts two sport teams – hockey and basketball and has so far had a very successful record.

Student Chapter of the American Marketing Association

By joining the Student Chapter of the American Marketing Association at reduced rates, students may participate in activities of the Toronto Chapter. These include regular monthly dinner meetings, special workshop sessions, and an annual management seminar. In addition, the Student Chapter sponsors a variety of activities normally including speakers, product presentations, films and field trips. By sharing in these activities students learn of current developments in marketing, meet leading members of the marketing community and are thus better able to assess career opportunities in the marketing field.

Investment Club

The purpose of the club is primarily to learn the operations and means of the investment market, and secondly to earn a profit on investments made by the club membership.

Decisions are made weekly at meetings where guest speakers are sometimes invited. Membership is open to all students of the Business School.

Other Student Organizations

All students in the School of Graduate Studies become members of the Graduate Students' Union, a body which brings together for social purposes graduate students throughout the University. Male students may participate in the activities sponsored by Hart House which offers facilities for social and cultural endeavours. Students wishing to use the athletic facilities at Hart House may do so by paying an additional athletic fee.

All students may participate in the activities of the International Student Centre, which has been established by the University to provide a meeting place on campus for organized social programs and informal gatherings of students from Canada and abroad. Further details may be obtained from Mrs. K. D. Riddell, Director, International Student Centre, University of Toronto, Toronto 5, Ontario.

Health Services

All enquiries should be directed to the Health Service, University of Toronto.

A graduate student not domiciled in Canada must submit a certificate of freedom from disease, including tuberculosis as demonstrated by an X-ray file of his chest. He must also complete his medical examination by the Health Service within one month of registration.

Overseas and Foreign Student's Hospital Insurance

Students must apply personally for hospital insurance to the Ontario Hospital Services Commission on application forms available at the University Health Services and elsewhere. Effective coverage is within three months of the first premium payment.

To cover this waiting period, all newly-arrived overseas or foreign students are required to apply to the University Health Service, 256 Huron Street, within two weeks of registration for ninety day group hospital insurance. The costs are: single student, $8.50; married student with dependents, $21.00. The policy covers the holder from the day of registration for ninety days for hospital expenses only.

Student Expenses

It is estimated that the minimum cost of maintenance and fees for a single student living away from home is about $2,000 for the University session.

Each student should be prepared to spend up to $150 in connection with the orientation program, other student activities and the purchase of books.

MASTER OF BUSINESS ADMINISTRATION

The Master of Business Administration program is a two-year course leading to the degree of Master of Business Administration (M.B.A.). In the first year the student makes a choice of several courses leading either to an M.B.A. degree in general management or in management science, with the consent of faculty advisers. Second year courses are partly selected within these two streams by the student according to his own career interests.

In the first year, the program consists of twelve half subjects (six in each term) designed to provide an understanding of the essentials of business administration. The second year's work comprises the equivalent of five full subjects. Selection of subjects in the second year is restricted to ensure a reasonably broad program.

Eligibility

Admission to the Master of Business Administration program is open to graduates of universities approved by the School of Graduate Studies in accordance with its general regulations.

Applicants must have secured second class honours (or B standing) in their undergraduate work. In evaluating undergraduate standing the greatest weight is given to the later years. As a general rule, applicants are required to demonstrate their potential ability to undertake graduate work in the field of business administration by obtaining a satisfactory score on the Admission Test for Graduate Study in Business administered by Educational Testing Service of Princeton, New Jersey. This requirement may be waived, however, for graduates of Canadian Universities whose undergraduate standing has been significantly above the minimum required for admission.

ADVANCED STANDING

Candidates who are otherwise eligible for admission to the Master's program may be granted advanced standing and permitted to

register in the second year of the program in the following circumstances:

1. A graduate from an honour course in commerce or business administration which extended over four years from Senior Matriculation and which in the opinion of the School of Business, has provided an adequate program of studies in this area may be admitted into the second year of the program provided that he has obtained second class or B standing in his final undergraduate year and that he has covered all or substantially all of the subjects of the first year. If his undergraduate program is deficient in one or more areas, a special program may be prescribed and he may be required to take one or more first-year subjects in addition to the regular work of the second year. A candidate required to take more than two half subjects of the first year in addition to his second year's work will not be able to complete his work for the degree in one year.

2. A candidate who has obtained the Diploma in Business Administration with B standing or who has done satisfactory graduate work at another university will be admitted to the second year of the program provided that the subjects he has taken are, in the opinion of the School of Business, equivalent to the work of the first year. If not all of the subjects of the first year have been adequately covered, the choice of second-year subjects may be restricted or additional subjects may be prescribed.

Application

Application forms for admission to the Master of Business Administration program must be obtained from the School of Graduate Studies.

For admission to the Master's program, two application forms, duly completed, and two copies of the official transcript of the applicant's undergraduate record, certified by the university concerned, must be forwarded to the Secretary, School of Graduate Studies, University of Toronto, Toronto 5, Ontario. Unofficial or uncertified photostatic copies of transcripts are not acceptable. Since many institutions are unwilling to release full details of a student's record to the student himself, it is usually advisable to ask the undergraduate institution to send transcripts direct to the School of Graduate Studies.

Applications for admission should be submitted by March 15 in order to be assured of first consideration. Applications received up

until August 1 will be considered if places are available. An application fee of $10 (certified cheque or money order in Canadian funds payable to the University of Toronto) must accompany applications from students not previously enrolled in the School of Graduate Studies. In no case will application fees be refunded, nor will they be credited against fees.

Applications will be considered from students who are in their final year of undergraduate study and such applicants, if their standing to that point meets the requirements, will be granted conditional admission.

Since, in many cases, the School of Business will not recommend admission unless a satisfactory score has been obtained on the Admission Test for Graduate Study in Business and since the test results are also taken into account in awarding certain fellowships, applicants are advised to arrange to take this test as soon as possible. Information regarding the test may be obtained from: Admission Test for Graduate Study in Business, Educational Testing Service, Box 966, Princeton, New Jersey 08540, U.S.A. The test is a written four-hour test given four times a year at major centres throughout the world.

Because students are required to be fluent in the English language, applicants from countries in which English is not the normal means of communication will be required to demonstrate their competence in English before their arrival at the School. Normally this is best done by means of the test administered by the English Language Institute, University of Michigan, or by the Test of English as a Foreign Language, administered by the Educational Testing Service of Princeton, New Jersey. Although the test results need not be submitted until the applicant has been advised that he is otherwise acceptable, the applicant can avoid delay in receiving advice of final admission by arranging to take the English test at an earlier date.

Acceptance in the program is valid only for the session for which application is made; students who postpone commencement of the program for which they have been accepted must re-apply.

Registration

The School of Business operates on a sessional basis and candidates are admitted in September of each year only. Registration of candidates for the 1970–71 session of the Master's program will take place on September 9, 1970. Detailed instructions will be sent to accepted candidates in advance of that date.

At least the first instalment of fees must be paid before registration. See page 26.

Courses of Study

Detailed descriptions of the subjects of study are set out on pages 46 to 55.

FIRST YEAR

In the first year the student, with the consent of faculty advisers, makes a choice of several courses leading either to an M.B.A. degree in general management or in management science.

The first year of the Master's program consists of twelve half subjects selected as indicated from the list below:

Required subjects:

- 1010X Economics of Enterprise
- 1011X Economic Environment of Business
- 1021X Accounting I
- 1022X Accounting II
- 1030X Business Finance
- 1040X Production
- 1050X Marketing
- 1061X Administrative Behaviour
- 1062X Administrative Theory

Optional subjects:

General program:

- 1070X Statistics for Business Decisions
- 1072X Business Information Systems

and one of the following:

- 1041X Introduction to Operations Analysis
- 1071X Quantitative Methods

Management Science program:

- 1073X Mathematics for management science
- 1074X Probability Theory
- 1075X Mathematical Statistics

X All subjects are "half subjects" offered in one term only.

Substitutions and Credits

Students who have not been granted advanced standing will normally be required to take the complete first-year program consisting of the twelve half subjects. If, however, a student has done satisfactory work elsewhere in courses considered to be equivalent to one

or more of the first-year subjects, he may be granted an exemption from that subject. If it is considered necessary, a special examination may be required. Exemptions cannot be granted in more than two half subjects. Students eligible for exemption in more than two half subjects will be required to substitute another approved graduate subject for those in excess of two half subjects.

In special cases where a student has covered, in an undergraduate honour course or in another graduate course, work considered to be equivalent to first-year subjects, he may be granted credit in the corresponding subjects. All credits are subject to the approval of the Director.

SECOND YEAR

The second year program consists of the equivalent of five full subjects. Except in cases where a special program has been approved by the Director, the second year subjects must be chosen in accordance with the following rules:

(*a*) Each student must take 2004X, Business Strategy, and 2100X, Economics and Business Policy.

(*b*) The remaining four full subjects (or equivalent) are to be chosen from the list of second year subjects on page 23. The total program must be balanced — generally this will be interpreted to mean that no more than two subjects (or equivalent) can be selected in any field of study.

(*c*) Students interested in the management science program are advised to include 2401X, 2402X, and 2403X in their programs.

(*d*) Qualified students may substitute one or more of the Ph.D. subjects listed on page 36 for the equivalent number of regular second year subjects with the approval of the Director and the instructor concerned.

(*e*) One subject from another graduate department of the university may be substituted for one of the optional subjects provided that the subject chosen is approved by the department concerned and by the School of Business.

The graduate departments offering courses which may be suitable for inclusion in the program include the following:

Computer Science
Culture and Technology
Industrial Engineering
Law
Mathematics
Political Economy

Sociology

(*f*) One or more extra subjects (not counting for credit towards the degree) may be taken with special permission.

(*g*) A student's choice of subjects may be restricted by conditions imposed either on admission to the program or on completion of the first year's work.

(*h*) All programs are subject to approval by the Director of the School of Business and by the School of Graduate Studies.

List of Subjects:

X indicates a half subject (one term)

2002	Research Project
2004X	Business Strategy
2051	Marketing Research
2062	Union-Management Relations
2063	Human Relations in the Industrial Community
2100X	Economic and Business Policy
2200X	Management Accounting
2201X	Accounting Theory
2202X	Planning and Control Systems
2203X	Financial Accounting
2300X	Financial Management
2301X	Financial Theory
2302X	Financial Markets and Investment Analysis
2401X	Management Science I
2402X	Management Science II
2403X	Systems Simulation
2404X	Production and Inventory Management
2405X	Logistics Management
2406X	Problems in Operations Management
2407X	Design and Control of Industrial Systems
2500X	Marketing Management
2501X	Comparative Marketing Systems
2502X	Mass Communication in Marketing
2503X	Personal Communication in Marketing
2600X	Individual and Group Behaviour
2601X	Organizational Behaviour
2602X	Manpower Planning and Staffing
2603X	Manpower Development and Compensation
2604X	Organizational Design and Change
2605X	Interpersonal Dynamics
2610X	Industrial Relations

2611X Economics of Labour Relations
2701X Applied Statistical Decision Theory
2702X Sample Survey Theory and Its Applications
2703X Technology of Management Information Systems
2704X Selected Topics in Management Information Systems
2711X Business Cycles and Forecasting Models
2712X Econometrics and Business Forecasting

Academic Standing

The following grading system is employed:

GRADE	MARKS
A	75–100%
B	66–74%
C	60–65%
F (Failure)	Below 60%

FIRST YEAR

In order to obtain credit for the work of the first year a student must obtain at least C standing in each subject and an average of at least 66% of the aggregate marks. No supplemental examinations are provided and a student who fails to obtain the required standing in a subject will be required to repeat that subject.

A student who obtains the required 66% of the aggregate marks but who fails to obtain standing in one subject (or two half subjects) may be permitted to register in the second year while repeating the failed subject or subjects.

SECOND YEAR

In order to be eligible to receive the degree, a student must obtain B standing in each of the subjects of the second year. Students who obtain an average of 66% of the total marks but who fail to obtain standing in one subject may be permitted to repeat the failed subject.

General Regulations

A student whose attendance at classes is unsatisfactory, or whose work is deemed unsatisfactory, may have his registration cancelled at any time by the Council of the School of Graduate Studies.

In order to be eligible to receive the degree, all requirements must be completed within four years from the date of first enrolment in the second year of the program.

After completion of course requirements, candidates for the degree must re-register in the School of Graduate Studies each year until the degree is granted. Failure of a student to re-register as required will cause his enrolment to lapse. It may only be re-established if his application for reinstatement is approved by the School of Business and the School of Graduate Studies and the registration fees are paid for each of the years in which he has failed to register.

Aegrotat standing will not be granted but special examinations may be provided for students who were unable to write the final examinations or whose performance was adversely affected by reason of illness, domestic affliction, or other causes. Petitions for special consideration on account of such factors must be submitted to the Secretary of the School of Business within three days after the end of the examination period, together with a doctor's certificate which includes a statement that the candidate was examined at the time of illness, or other evidence.

The Master of Business Administration program is not normally available to part-time students. Applicants wishing to obtain credit towards the degree on a part-time basis may, however, cover the equivalent of the first year by registering in the Diploma course in Business Administration. Credit against the first year of the M.B.A. program will normally be granted for each subject of the Diploma Course in which adequate standing has been obtained. (See page 31.) In exceptional cases, well qualified students may be permitted to take the second year of the Master's program on a part-time basis.

Appeals

A student wishing to appeal to the Senate against a decision of the Council of the School of Graduate Studies should consult the Secretary of the School of Graduate Studies or the office of the university registrar about the preparation and submission of his petition to the Secretary of the Senate.

Fees

Before students can register in the Master's program, they must complete fees forms and pay all, or the first instalment, of the prescribed fees. Fees forms are available at the School of Graduate Studies. All cheques and money orders should be made payable to the University of Toronto.

The fees payable (subject to change) are as follows:

FULL-TIME STUDENTS

	ACADEMIC FEE	INCIDENTAL FEES*	TOTAL FEES	FIRST INSTAL.	SECOND INSTAL.
Men	$435	$47	$482	$265	$220
Women	435	27	462	245	220

*Incidental fees include: Hart House (Men) $20, Students' Administrative Council $12, Health Service $10 and Graduate Students' Union $5.

Fees must be paid before registration. Penalty for late registration is $10, plus $1 per day up to a total of $20.

If a student elects to pay his fees in two instalments, the penalty for late payment of the first instalment is the penalty for late registration, as above. The second instalment is due on or before January 15 (without further notice). Penalty for late payment of the second instalment is $3 per month up to $10.

Re-Registration Fee

The fee payable by students required to re-register is $60 per year plus any applicable incidental fees.

PART-TIME STUDENTS

Academic fee: $110 per subject.
Incidental fees: $15.
Fees must be paid *in full* before registration.

Withdrawal

If for any reason a student cannot continue classes, he must submit to the Secretary of the School of Graduate Studies written notice of intention to withdraw. Fees adjustment will be considered only from date of receipt of notice.

DIPLOMA IN BUSINESS ADMINISTRATION

The Diploma Course is a one-year course leading to the designation Diploma in Business Administration (Dip.Bus.Admin.). The program of studies consists of twelve subjects and a comprehensive examination. The program may be taken either full-time or part-time in day classes, or part-time in evening classes.

Eligibility

Admission to the Diploma Course is open to graduates of recognized universities, who have shown evidence of capability for successful work in the course by their undergraduate studies.

Applicants must have secured third class honours (or C standing) in their undergraduate work. In evaluating undergraduate standing the greatest weight is given to the later years.

As a general rule, applicants are required to demonstrate their potential ability to undertake graduate work in the field of business administration by obtaining a satisfactory score on the Admission Test for Graduate Study in Business administered by Educational Testing Service of Princeton, New Jersey. This requirement may be waived, however, for graduates of Canadian Universities whose undergraduate standing has been significantly above the minimum required for admission and, in exceptional cases, for applicants who have obtained appropriate standing in graduate courses elsewhere or who have satisfactory business experience.

Applicants should note that the limited facilities of the School make it necessary to restrict enrolment in the Diploma Course. In selecting candidates, preference is given to the more highly qualified applicants and, as a result, those possessing only the minimum requirements for admission cannot be assured of a place in the course.

At the present time, the indications are that it will prove impossible to admit applicants to day classes unless their qualifications

meet the standards imposed for admission to the M.B.A. program (see page 18).

Application

Application forms for admission to the Diploma Course in Business Administration must be obtained from the School of Business.

For admission to the Diploma Course, two application forms, duly completed, and two copies of the official transcript of the applicant's undergraduate record, certified by the university concerned, must be forwarded to the Secretary, School of Business, University of Toronto, Toronto 5, Ontario. Unofficial or uncertified photostatic copies of transcripts are not acceptable. Since many institutions are unwilling to release full details of a student's record to the student himself, it is usually advisable to ask the undergraduate institution to send transcripts direct to the School of Business. Applications for admission must be submitted by August 20.

Applications will be considered from students who are in their final year of undergraduate study and such applicants, if their record to date meets the requirements, will be granted conditional admission.

Since in many cases, the School of Business will not admit applicants unless a satisfactory score has been obtained on the Admission Test for Graduate Study in Business, applicants are advised to arrange to take this test before submitting their applications. Information regarding the test may be obtained from: Admission Test for Graduate Study in Business, Educational Testing Service, Box 966, Princeton, New Jersey 08540, U.S.A.

Because students in the School of Business are required to be fluent in the English language, applicants from countries in which English is not the normal means of communication will be required to demonstrate their competence in English before their arrival at the School. Normally this is best done by means of the test administered by the English Language Institute, University of Michigan, or by the Test of English as a Foreign Language administered by the Educational Testing Service of Princeton, New Jersey. Although the test results need not be submitted until the applicant has been advised that he is otherwise acceptable, the applicant can avoid delay in receiving advice of final admission by arranging to take the English test at an earlier date.

Acceptance in the program is valid only for the session for which application is made; students who postpone commencement of the program for which they have been accepted must re-apply.

Registration

The School of Business operates on a session basis and candidates are admitted in September of each year only.

FULL-TIME STUDENTS

Registration of full-time students for the 1970–71 session of the Diploma Course will take place on September 9, 1970. Detailed instructions will be sent to accepted candidates in advance of that date.

At least the first instalment of fees must be paid at the time of registration. (See page 31.)

In no case will a student be permitted to register in the School for the first time after October 15.

PART-TIME STUDENTS

Part-time students may register by mail. Registration forms for the 1970–71 session will be sent to all accepted applicants and continuing students in the latter part of August.

Registrations will be accepted in the order received up to class limits. Registration forms must be accompanied by a cheque covering fees in full. No registrations of part-time students will be accepted after September 15.

Withdrawal

If for any reason a student cannot continue classes, he must submit to the Academic Secretary, School of Business, written notice of intention to withdraw. Fees adjustment will be considered only from date of receipt of notice. Withdrawals cannot be accepted after December 15 for subjects offered in the fall term or after March 15 for subjects offered in the spring term.

Courses of Study

The Diploma Course in Business Administration consists of twelve half subjects as follows:

110X Economics of Enterprise
111X Economic Environment of Business
121X Accounting I
122X Accounting II
130X Business Finance
140X Production
150X Marketing
161X Administrative Behaviour

162X Administrative Theory
170X Statistics for Business Decisions
172X Business Information Systems
and one of the following:
141X Introduction to Operations Analysis
171X Quantitative Methods

In addition, candidates for the Diploma are required to write a comprehensive examination.

These subjects which are similar to those in the Master's program, are described on pages 46 to 48.

No credits will be allowed for work taken elsewhere. If, however, a student has done satisfactory work elsewhere in courses considered to be equivalent to one of the Diploma subjects, he may be permitted to substitute another graduate subject for the equivalent Diploma subject. If it is considered necessary, a special examination may be required. Substitutions will be permitted for only one full subject or two half subjects.

Qualified candidates may be permitted to substitute subject #1073X, #1074X and #1075X of the Master of Business Administration program for the corresponding Diploma subjects (#170, #172 and either #141 or #171).

Academic Standing

The following grading system is employed:

GRADE	MARKS
A	75–100%
B	66–74%
C	60–65%
F (Failure)	Below 60%

Candidates must obtain at least C standing in each subject and in the comprehensive examination in order to be eligible for the Diploma in Business Administration. A candidate who obtains the required 60% average but who fails to obtain standing in the equivalent of two full subjects may be permitted to repeat the failed subjects.

General Regulations

A student whose attendance at classes is unsatisfactory, or whose work is deemed unsatisfactory, may have his registration cancelled at any time by the Council of the School of Business.

In order to be eligible to receive the Diploma, a candidate must complete all the required subjects and the comprehensive examination within four years from the date of first registration.

Aegrotat standing will not be granted but special examinations may be provided for students who were unable to write the final examinations or whose performance was adversely affected by reason of illness, domestic affliction, or other causes. Petitions for special consideration on account of such factors must be submitted to the Secretary of the School of Business within three days after the end of the examination period, together with a doctor's certificate which includes a statement that the candidate was examined at the time of illness, or other evidence.

The Diploma Course may be taken on a part-time basis. Part-time students are not permitted to register in more than two subjects in each term.

Graduates of the Diploma Course who have obtained an average of 66% in the course will be deemed to have met the minimum requirements for admission to the Master of Business Administration program with advanced standing.

Appeals

A student wishing to appeal to the Senate against a decision of the Council of the School of Business should consult the Secretary of the School of Business or the office of the university registrar about the preparation and submission of his petition to the Secretary of the Senate.

Fees

Before students can register in the Diploma Course, they must complete fees forms and pay all, or the first instalment, of the prescribed fees. Fees forms are available at the School of Business at the time of registration.

All cheques and money orders should be made payable to the University of Toronto.

The fees payable (subject to change) are as follows:

FULL-TIME STUDENTS

	ACADEMIC FEE	INCIDENTAL FEES*	TOTAL FEES	FIRST INSTAL.	SECOND INSTAL.
Men	$435	$42	$477	$260	$220
Women	435	22	457	240	220

*Incidental fees include: Hart House (Men) $20, Students' Administrative Council $12 and Health Service $10.

Fees must be paid before registration. Penalty for late registration is $10, plus $1 per day up to a total of $20.

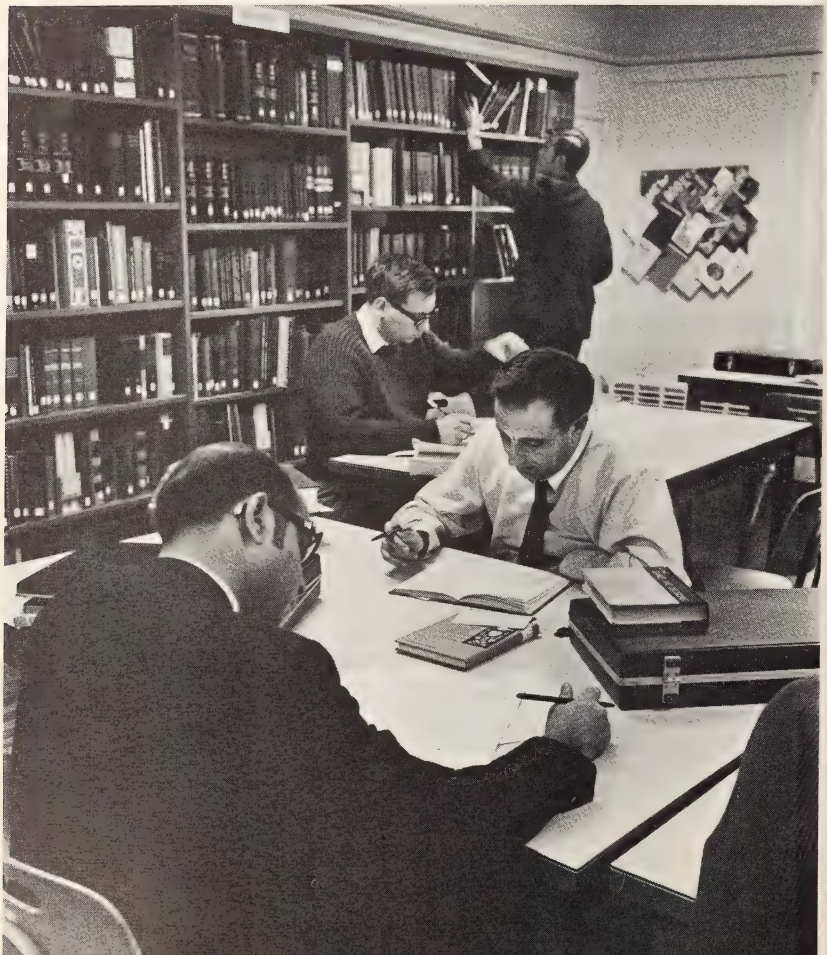
If a student elects to pay his fees in two instalments, the penalty for late payment of the first instalment is the penalty for late registration as above. The second instalment is due on or before January 15 (without further notice). Penalty for late payment of the second instalment is $3 per month up to $10.

PART-TIME STUDENTS

Academic fee: per half subject $50.

In addition to these academic fees, Diploma Course students attending day classes are required to pay $10 per year Health Service fee (or $5 per year if only attending day classes in one half subject). Students who have obtained standing in all subjects of the Diploma Course but who have not passed the comprehensive examination must re-register and pay a fee of $15 in order to be eligible to sit for this examination.

Fees for part-time students must be paid *in full* at the time of registration.



DOCTOR OF PHILOSOPHY

The Doctoral Program is designed to be flexible, to enable students to have substantial scope for their development on an independent basis with as much personal attention as required. Since it is a research degree, the candidate's program will enable him to acquire competence in his major area of interest and the background disciplines in order to carry out his research for the thesis. Thus the goal of the program is to provide candidates with the necessary skills to:

- carry out teaching and research in universities, or
- assume major research responsibilities in business and government.

The content of the PH.D. program is based on:

- the development of competence in evaluating theories applicable to business and in exploring, identifying and analyzing problems.
- study in the three disciplines essential to an understanding of the administrative decision making – economics, mathematics and the behavioural sciences – in preparation for qualifying examinations.
- study of a major field of specialization in one of the following: business economics, marketing or finance.
- study in two other fields, one to be chosen from a business area; the other to be chosen from the underlying disciplines.
- demonstration of the ability to design and conduct independent research. The candidate will submit and defend a thesis based on his research, which will make a significant contribution to knowledge in the field of business.

Eligibility

Admission to the Doctoral Program is limited to graduates of high intellectual ability, who have an interest in furthering the understanding of the operations of the economic sectors of society, and the individual organizations and administrative units within it. Because of the broad foundation for study in business, candidates from

a wide variety of backgrounds in undergraduate work are accepted. Candidates who lack the pre-requisites for taking graduate work in business may remedy the deficiencies by successful completion of courses in the first (pre-requisite) year of the Master of Business Administration program.

Candidates who have received an undergraduate or graduate degree in business administration, commerce or management, from a recognized university will normally be able to complete the program within a three-year period of full-time study.

Application

All applications for the PH.D. program must be submitted to the School of Graduate Studies and all candidates must meet the requirements of that School. Full information regarding the procedures to be followed is set out in the calendar of the School of Graduate Studies.

Evaluation of applicants will be based upon academic records, three letters of recommendation from former professors or other suitable referees familiar with the applicant's qualifications, personal interview (where necessary) and the applicant's score obtained on the Admission Test for Graduate Study in Business.

The Program of Study

Each student's program is unique. Programs will vary because students will have different backgrounds and interests. The focus of all programs is to achieve satisfactory standards of competence in the major and minor fields of study to enable the student to carry out his research and to submit a satisfactory thesis. Normally, in preparation for their comprehensive examination, students will take a program of at least five business courses at the 2000 and 3000 level, at least three of which will be in the major field and at least one in the minor field. Competence in the underlying disciplines can be achieved either by courses or independent study, but one of the disciplines must be chosen as an outside minor.

The program of study for each student, developed by him in conjunction with his adviser, must be approved by the PH.D. Committee and by the School of Graduate Studies. The progress of the student through the program will be determined by the successful completion of the following:

- qualifying examinations in the functional areas and the underlying disciplines. Usually, the final examinations in specified courses will be accepted in lieu of a qualifying examination.

— a comprehensive written and oral examination in the student's major and business minor field.
— the written presentation and oral defence of a thesis embodying an original piece of research.

If a student enters the Doctoral Program, with the pre-requisites for graduate study in business, his first year of study will normally be devoted to reaching a level of competence in the underlying disciplines and to beginning work on his major and minor fields. At this point, a student should be prepared for his qualifying examinations.

The second year of the program will normally be concerned with further work in his major field with a substantial focus on research. During this year, the student will complete his preparation for the comprehensive examinations and will define his area of thesis research and submit a suitable topic. Students who have successfully completed graduate work in business administration may enter directly into the second year upon presenting evidence of competence required of students in the first year. Qualifying examinations may be required to determine the level of competence.

The Director (Dr. O. W. Main, 2nd from left) and the Chairman of the Ph.D. Committee (Prof. G. D. Quirin, centre) with three of the Ph.D. Students.

In the third year, the student will be engaged in full-time research on his thesis topic. Upon acceptance of the thesis and successful oral defence of it, he will be recommended for the PH.D. degree.

Courses of Study

For the 1970–71 session, the major fields of study currently offered are: (a) Business economics (b) Marketing and (c) Finance.

Other areas of study within the School are available as one of the candidate's minor fields (as Accounting, Human Resources and Organizational Theory, and Industrial Relations).

In addition to selected subjects from the Master of Business Administration program, the following subjects will be offered for doctoral candidates:

2111X	Managerial Economics I
2112X	Managerial Economics II
2151X	Economics of Resource Allocation
2152X	Business and the Regulatory Environment
2153X	The Canadian Economic Environment
3010	Theoretical Managerial Economics
3030	Financial Theory of the Firm
3050	Marketing Theory
3090	Reading Course in Approved Field

X indicates half subject.

EXECUTIVE PROGRAMS

In recognition of the need for continuing education programs for practising business people the School of Business sponsors a number of part-time special programs. Such programs assist those preparing for greater responsibility in business or those who feel a need for further study in order to increase their managerial effectiveness.

Special programs also facilitate the much-needed contact between faculty members and members of the business community. Through these programs, managers can be made aware of research programs being carried out and can evaluate and suggest direction for such activity. Similarly, faculty members can test the practicability and application of new concepts being developed in the academic business institutions which can be of great value in the normal conduct of graduate education in business.

Special programs include short seminars, one-day conferences, a summer residential program for executives and a winter evening series of meetings. These are outlined in more detail below.

Part of the capacity audience at Convocation Hall, University of Toronto, for a lecture in the Distinguished Lecture Series.

Management of the Enterprise

This series of dinner meetings is designed for executives who hold positions of responsibility and who have had considerable experience in some phase of management. At each meeting the group hears a concise and provocative presentation of a topic of interest to the general manager.

The objective of Management of the Enterprise is to examine and assess current developments in administration and business. Seminars are held once a week.

Business Outlook Forum

This one-day forum, held in late November, brings business executives together to examine the prospective business climate for the coming year. Business leaders and staff members of the School present for discussion their views on the outlook for the economy and for selected industries.

Distinguished Lecture Series

Through the co-operation of the Canadian Imperial Bank of Commerce, the School sponsors public lectures by outstanding leaders in the fields of business administration and economics. Distinguished Lectures have been given by Dr. Eli Ginzberg, Dr. Chris Argyris, Dr. Herbert Simon and Dr. Peter Drucker.

Financial Analysts Computer Course

A special course in computer assisted financial analysis and mathematical models begins in September. It is especially designed for the financial analysts.

Managing Engineers

This two-and-a-half day seminar is intended for those who supervise engineers as well as managers with responsibilities related to engineering functions, or those preparing themselves for such roles. It has been organized to bring current thought – both theory and practice – to those who seek to keep themselves and their organizations vital, efficient and effective. The sessions will focus on the management process, perception and motivation, utilization of engineers, and managing by objectives, all related to dealing with engineers. Generally conducted in October.

Management Development

A two-day seminar for people concerned with and/or actively carrying out a management development program. Consists of explanation of some basic ideas and practices. Speakers are from the School and outside organizations. Conducted in February.

Applying the Management Process

This Management Course is a two-week live-in course in May designed specially for people who have specialized most of their careers and are interested in obtaining a broader understanding of the management process.

Corporate Planning and Strategy

This three day seminar, held in the Spring, is concerned with decision making in a complex world which requires that an overall strategic approach be developed by the organization.

Mergers and Acquisitions

A three and a half day course to analyze the process of merger and acquisition of business enterprises has been developed to give senior general, finance and owner personnel a practical overview of the actual factors to be considered if they are involved in an amalgamation either in the selling or buying relationship.

Operations Management and Logistics

A three week program for managers of enterprises providing either goods or services to give an opportunity for keeping up with developments in these fields.

Other School of Business Programs

From time to time the School sponsors special lectures and conferences open to the business public or for special groups having a common interest in some phase of business administration. The objective is to bring together a group of businessmen and university staff members to examine, discuss and evaluate some phase of current development in administration or business. These conferences provide a forum for the exchange of views on various aspects of the changing field of business administration.

Special brochures on all the above programs are available from Co-ordinator of Executive Programs, School of Business, University of Toronto, Toronto 5.

Group of executives during one of the seminars

Division of University Extension

The Division of University Extension also offers many evening courses in business and business administration. Details of these programs may be obtained from the Division of University Extension, University of Toronto, 84 Queen's Park Crescent, Toronto 5, Ontario.

FELLOWSHIPS, AWARDS AND FINANCIAL AID

There are various sources of financial assistance available to qualified students. Fellowships in the Master of Business Administration program are awarded to students of high academic attainment. Bursaries, loan funds and assistantships are available to all students.

The Shiffer-Hillman Fellowship

This fellowship, of the value of $1,000, is the gift of Shiffer-Hillman Company, Limited. It is to be awarded every second year, and will be awarded in the 1971–72 session. It is open to graduates of any recognized university who propose to undertake full-time graduate work in Business Administration leading to the degree of Master of Business Administration.

The James William Woods Fellowship

This fellowship, of the value of $1,000, is the gift of Gordon Mackay and Company Limited. It is to be awarded to a student entering the second year of the Master of Business Administration Program who is intending to specialize in the field of Marketing. Selection will be based on academic excellence and research ability.

The Mary Jane Felker Fellowship

This fellowship, of the value of approximately $1,000, has been established by virtue of a bequest from the late Mrs. Felker of Guelph, Ontario. It is open to graduates of any recognized university who propose to undertake full-time graduate work in Business Administration leading to the degree of Master of Business Administration.

The Professional Marketing Research Society Award

This award of the value of $150, has been made available by the Professional Marketing Research Society, Toronto. It will be awarded to a student in the Second Year of the Master's Course on the

basis of overall standing and promise demonstrated in the Diploma Course, or the First Year of the Master's Course.

The Toronto Construction Association Fellowship

This fellowship, of the value of $3,000, to be awarded to a student entering the second year who in the opinion of the Director of the Centre for Industrial Relations is most likely to contribute in a practical way to industrial relations as they pertain to the construction industry, is open to graduates who propose to undertake full-time studies leading to the degree of Master of Business Administration. Applications should be submitted to the Director, Centre for Industrial Relations, University of Toronto, prior to March 1.

Brascan Limited Fellowships in Business Administration

Two fellowships, each valued at fees plus $3,000, the gift of Brascan Limited, are offered annually in the School of Business to Brazilian nationals who enrol in the Diploma course. These awards are tenable for one session. Students who held a Brascan Limited Fellowship and who are admitted to the Second Year of the Master of Business Administration program may, upon the recommendation of the Director of the School of Business, qualify for a "renewal" of the fellowship for the additional year. Application should be made to the Secretary, School of Business, prior to March 15.

Open Fellowships

The following open fellowships in the School of Graduate Studies may be held by candidates for the M.B.A. degree. With the exception of Prerequisite Year Fellowships, these are open only to students entering the second year of the program:

Special Open Fellowships	$4,000
Mary H. Beatty Fellowships (renewable)	$3,000
Sidney Smith Fellowship	$2,500
Open Fellowships	up to $3,000
Pre-requisite Year Fellowships	up to $1,000
Margaret and Nicholas Fodor Fellowship	approximately $5,000
George Sidney Brett Memorial Fellowship	approximately $1,300
Sir Joseph Flavelle Fellowships	approximately $1,400
Mary Elizabeth Mahony Fellowship	approximately $1,200
R. V. LeSueur Fellowship	$500

Applications for all the above fellowships must be submitted to the Secretary, School of Graduate Studies, on or before February 1.

Seagram Business Fellowships

The Samuel Bronfman Foundation has made available on an annual basis a series of fellowships to be awarded to students in graduate schools of business in Canadian universities. The awards are limited to Canadian citizens.

Type A Graduate Study Fellowships, of which there are 12 awards of $1,000 each, are open to graduates of any recognized university who propose to enter the first year of the Master of Business Administration program. Application for Type A Fellowships must be made directly by individuals to: Dr. Herman Overgaard, Secretary/Treasurer, Association of Canadian Schools of Business, c/o School of Business and Economics, Waterloo Lutheran University, Waterloo, Ontario, by April 1.

Type B Graduate Study Fellowships, of which there are 6 awards of $1,600 each, are open to students entering the second year of the Master of Business Administration program. Candidates for Type B Fellowships are nominated by the School of Business. Nominations close May 15.

Applicants for these fellowships are required to submit their score in the Admission Test for Graduate Study in Business.

Fellowships Awarded by Other Outside Agencies

The following open fellowships in the School of Graduate Studies may be held by candidates for the M.B.A. degree who are entering the second year of the program.

Gulf Oil Canada Limited Graduate Fellowships	$3,500
Bell Canada Fellowships	$3,500

Application forms may be obtained from the Director of Student Awards, Association of Universities and Colleges of Canada, 151 Slater Street, Ottawa, Ontario. Final date for receipt of applications March 1.

The Society of Industrial Accountants of Canada Business Fellowships

A total of five fellowships of $1,200 each are available annually to students enrolled in a graduate business program at Canadian universities. Awards are to be granted to students whose program indicates an interest in management accounting and accounting research. Selections are made by the Fellowship Committee of the Society of Industrial Accountants. Applications should be made directly to: Administrative Secretary, Fellowship Selection Com-

mittee, Society of Industrial Accountants of Canada, P.O. Box 176, 154 Main Street East, Hamilton, Ontario.

The Canadian Institute of Chartered Accountants Graduate Fellowships

The Canadian Institute of Chartered Accountants Graduate fellowships, to a maximum amount of $2,500, are available to members of this Canadian Institute now teaching at a Canadian university, junior college or institute of technology who are candidates for a graduate degree beyond a first master's degree and who are studying with a view to a teaching career in Canada.

Applications must be received by The Director of Research, The Canadian Institute of Chartered Accountants, 250 Bloor Street East, Toronto 5.

School of Business Loan Fund

This fund was established by virtue of gifts of the Canadian Industrial Management Association, Consumers' Gas Company, Dominion Stores Limited, Massey-Ferguson Limited, Eastern Construction Limited, Ford Motor Company of Canada, Mr. B. C. Donnan, Mr. N. J. Parsons and Mr. I. P. Sussman. It provides for loans to competent students to meet financial problems which could not have been anticipated. Repayments commence July 1st following date of graduation, from which date interest at 6% is charged. Applications may be made to the Secretary, School of Business.

Graduate Students' Emergency Loan Fund

This fund has been established in the School of Graduate Studies to assist full-time students to meet financial problems which could not have been anticipated. Full information is available from the Secretary of the School of Graduate Studies.

University of Toronto Alumni Loan Fund

This fund comes from subscriptions received from graduates of the University and is administered by the University of Toronto Alumni Association. Particulars may be obtained from the University of Toronto Alumni Association, Alumni House.

Ontario Student Awards Program

The Province of Ontario instituted a program in 1966 incorporating both the former Federal-Provincial Bursary Plan and the Canada Student Loans Plan. To be eligible for an award under this Program,

a student entering the School of Business must be a Canadian citizen, or have landed immigrant status; must have been a permanent resident of Ontario for at least 12 months and must be enrolled as a full-time student. Awards received by students from other sources will be counted as a direct resource against the grant portion of any Award made under this program after the first $150.

Further information and application forms are available from the School of Business in the case of Diploma Course students, or the School of Graduate Studies in the case of M.B.A. candidates. Information about loans and bursaries available to students from other provinces is available from the Department of Education in the province in which the student has established residence.

Assistantships

Each year there are openings for some graduate students as assistants to help with the correction of reports and for the supervision of the Library in the evenings. Assistantships are valued up to $750 depending on the type of work. Application for appointment as an assistant should be made to the Director of the School of Business.

Alumni Award

This award is presented each year by the School of Business Alumni Association to the student achieving the highest scholastic standing in the graduating class of the School of Business.

X indicates a half subject (one term)

110X/1010X Economics of Enterprise

The study of the determinants of market prices and of the allocation of resources in the market economy. Both product markets and the markets for factors of production are studied.

111X/1011X Economic Environment of Business

The study of the determinants of the levels of income, employment, and prices, at the national and international level. Government monetary, fiscal, and international economic policies are discussed.

121X/1021X Accounting I

Theory and practice of financial accounting; analysis and interpretation of financial statements. After necessary acquisition of basic techniques is assured, emphasis is placed on the significance of conventional accounting reports and the limitations inherent in the basic data.

122X/1022X Accounting II

The course is primarily concerned with the use of accounting reports as guides to administrative action and as a means of control. Cost accounting and the development of specialized analyses for decision making purposes are the major areas of concern.

130X/1030X Business Finance

The nature and scope of the finance function, capital markets, fund raising and resource allocation under conditions of risk and uncertainty, current finance, and capital budgeting are treated from the viewpoint of both the firm and the economy.

140X/1040X Production

Problems of design, planning and control of operating systems of organizations applicable to industrial, service, wholesale-retail con-

cerns, banks, hospitals, etc. The interaction between objectives and decisions in the operating system with other functional areas is considered.

141X/1041X Introduction to Operations Analysis

Basic models of operational research and their general applicability to management problems are stressed. Topics include linear programming, transportation model, dynamic programming, project networks (PERT/CPM), and elementary queueing models.

150X/1050X Marketing

Topics include: the Canadian marketing system, buying behaviour of consumers and industrial buyers, trends in retailing and wholesaling, measuring marketing opportunities, shaping the product line, managing channels of distribution, planning advertising programs, and managing the sales force.

161X/1061X Administrative Behaviour

Considers theoretical ideas and empirical data concerning individual and group behaviour in organizations. Emphasis is placed on the relevance of these for problems confronting management: motivation, influence, communication, supervision, and decision making.

162X/1062X Administrative Theory

Presents the evolution of theory and practice from the classical approach of bureaucratic theory to the concepts of the organization as an open system. The managerial assumptions and implications of these theories are explored.

170X/1070X Statistics for Business Decisions

The simpler concepts of probability theory and statistical inference including sample spaces, random variables, simple distribution, sampling distributions, estimation of parameters, hypothesis testing, confidence intervals, and introductory regression analysis.

171X/1071X Quantitative Methods

For students who have not had a university-level course in mathematics but have some familiarity with secondary school mathematics. To introduce some of the concepts relevant to the use of mathematical models in management: sets, relations, and functions; linear algebra; differential and integral calculus.

172X/1072X Business Information Systems

Includes computer characteristics, information theory, flow charting programming, systems organization, indexing languages and information retrieval, and the management problems of data processing. Students use the University's computer.

1073X Mathematics for Management Science

A review course covering topics pertinent to the application of mathematics to management science. Includes set theory, linear algebra, classical optimization techniques, and Kuhn-Tucker theory.

1074X Probability Theory

Includes basic concepts, theoretical distributions, moment generating functions, limit theorems, distributions of functions of random variables, and introduction to stochastic processes.

1075X Mathematical Statistics

Includes sampling, estimation of parameters, tests of significance, methods of inference, and introductory regression analysis.

2002 Research Project

In lieu of one subject, students may do a research project and present a paper in a business field of their choice. It is expected that an original contribution to knowledge in the field will be made.

2004X Business Strategy

To provide examination of corporate policy issues at top management level. A selected range of problems is discussed, and treatment is interdisciplinary in character. The approach is based upon examining policy issues for the goals of the corporation and discussing management practice required to attain them. Analysis is made of the conditions for the survival and successful operation of the corporation in its environment, as this relates (1) to external conditions for its economic mission, and (2) specific organization policies of action.

2051 Marketing Research

The use of research in the marketing function, and research as a process in such areas as product research, performance analysis, and the measurement of advertising effectiveness.

2062 Union-Management Relations

Topics include establishment of bargaining rights through certifica-

tion, conciliation and mediation processes, termination of bargaining rights, unfair labour practices, the collective agreement, arbitration, jurisdictional disputes, picketing, and injunctions. The government role in industrial relations in Canada and particularly in Ontario is examined.

2063 Human Relations in the Industrial Community

Designed to give participants an opportunity to experience, in the human organization of the seminar itself, some of the social realities of living in a complex industrial society – such as understanding differences, developing objectives, utilizing new values and ideas.

2100X Economic and Business Policy

Economic theory is used to derive concepts useful for decisions in such management problems as risk assumption, marketing and advertising policy, capital budgeting, cost control and product and pricing policy. Emphasis is placed on the identification of policy issues and the proper utilization of economic, accounting and financial data in decision making.

2111X Managerial Economics I *

Economic and accounting costs. Estimation of marginal costs. Demand analysis. Analysis for pricing decisions.

2112X Managerial Economics II *

Capital Theory. Analysis of risk and uncertainty. Advanced capital budgeting models. Strategies in interdependent market situations.

2151X Economics of Resource Allocation *

General equilibrium in a market economy, capital theory, theory of risk and uncertainty with applications to optimization models.

2152X Business and the Regulatory Environment *

Industry structure and organization, with particular emphasis on markets with few participants. Pricing behaviour and market performance. Alternative approaches to the regulation of markets.

2153X The Canadian Economic Environment *

Macroeconomic analysis of economic growth, fluctuations and structural change, with particular emphasis on the problems arising from the "open" nature of the Canadian economy.

2200X Management Accounting

The application and use of accounting measurements and models in the administration of organizations; includes cost and profit behaviour, problems of cost and profit measurement, actual and standard cost systems, budget preparation and performance reporting, and the use of accounting data in business decision making.

2201X Accounting Theory

Selected issues relating to the preparation, certification and use of published financial statements. The development and current state of accounting and auditing theory are discussed as the basis for consideration of specific problems such as income determination under fluctuating price levels, accounting for leases, business combinations and income taxes, audit responsibility and audit independence.

2202X Planning and Control Systems

An integrative course intended to develop an appreciation of the interrelationship of managerial accounting and analytical, behavioural and technological considerations in the analysis and design of planning and control systems. Investigation into the goals of firms and organizational structures for specifying system requirements. The component elements of these systems are discussed and evaluated against the system requirements and the present and future roles of management accounting within the scope of management information and control systems are considered.

2203X Financial Accounting

Problems in financial accounting, auditing and business taxation including asset valuation and income determination, consolidated financial statements, funds flow and special purpose statements, audit techniques and procedures, audit reports, and selected provisions of income tax laws and regulations.

2300X Financial Management

Application of financial theory and management concepts to financial decision making. Major topics: finance in the model-systems management process; capital investment analysis and decision-making: conceptual basis and operational problems in estimating profitability and risk.

2301X Financial Theory

Topics include expected utility and state preference theories of

individual behaviour; income measurement, capital budgeting under certainty, capital structure and dividend policy; level and structure of yields in financial markets; portfolio diversification models.

2302X Financial Markets and Investment Analysis

Extension of topics in 2301X relating to investment policies of individuals and institutions. Topics include: theories of household saving, security valuation models and price movements, portfolio construction and performance measurement, term structure of interest rates, efficiency of financial markets.

2401X Management Science I

The structure of the deterministic models of operational research and their applicability to a wide variety of administrative decision problems.

2402X Management Science II

Similar to 2401X but dealing with stochastic models.

2403X Systems Simulation

Development of a conceptual framework in basic simulation theory as applied to systems analysis: theory of models, mathematical and descriptive representation of systems activities, design of simulation programs, organization of file structures, montecarlo technique, process generators, design and analysis of simulation experiments, applications include management games, inventory, queueing and scheduling models.

2404X Production and Inventory Management

Application of operations research to the analysis of deterministic and stochastic inventory and production models. Single period, multi-period, multiproduct and multiechelon models are considered. A renewal theoretic approach to inventory management is included.

2405X Logistics Management

Varied roles of production, marketing and transportation are considered in the design of logistics systems. Peculiar problems posed by international logistics are presented. A business logistics game is developed and used to study the impact of policies regarding inventory levels, models of distribution, shipment sizes, marketing channels and facility location.

2406X Problems in Operations Management

The effectiveness and limitations of quantitative models used in a man-machine environment. Topics include: selection and configuration of facilities, size and location of plants, job-shop scheduling, manpower scheduling, inventory management and production control.

2407X Design and Control of Industrial Systems

Designing, planning and controlling a large scale operating system considered in terms of stationary and dynamic interaction. The tools of computer simulation, network analysis and heuristic programming applied to topics in aggregate output scheduling, manpower scheduling, large-scale project control (PERT, CPM) and line balancing and control.

2500X Marketing Management

Focuses on: (1) specifying and meeting information needs for marketing decisions; (2) evaluating and using research designs and findings; and (3) applying decision theory to marketing management problems of realistic complexity. The case approach is used.

2501X Comparative Marketing Systems

Organized to: (1) spell out the nature, scope and utility of the comparative approach; (2) provide a theoretical behavioural framework for viewing different marketing systems in a cultural context; (3) show the role of the marketing system in the process of change and the development of national economic systems; (4) illustrate the marketing implications of cultural variables; and (5) deal with marketing situations in specific countries.

2502X Mass Communications in Marketing

Topics covered include mass media as effectors of change, the measurement of advertising effectiveness, the changing responsibilities for the social implications of marketing communications, the development of advertising strategy.

2503X Personal Communication in Marketing

Draws heavily on concepts developed in the human relations field. It involves the analysis of organizational, communicative and data acquisition differences existing in the understanding and management of buyer-seller relationships.

2600X Individual and Group Behaviour

Interactions in the organizational setting emphasizing theory and research in the social sciences. Initial concern is with the individual, his attitudes and motives, the means by which he is satisfied and influenced. Next the individual's place in a network of group relationships is considered. Concern is with processes of conformity and conflict and their impact upon group behaviour.

2601X Organizational Behaviour

The structure and design of modern organizations viewed as systems embedded in an environment, yet containing within themselves important sub-systems (human and technological). Organization structure is examined in relation to its appropriateness for these internal and external environments.

2602X Manpower Planning and Staffing

Translation of organization goals to specific manpower goals and objectives, and planning and staffing to meet an organization's manpower needs. The focus is on acquisition of the human resources of the work organization.

2603X Manpower Development and Compensation

Determination of goals, implementation, and evaluation of programs for training, employee and management development, compensation and reward administration, and organizational justice. The focus is on development, motivation, and maintenance of the human resources of the work organization.

2604X Organizational Design and Change

Emphasizes the study of organizations as socio-technical systems from the point of view of prospective change-agents.

Students are expected to study the theory of various aspects of problems of change and may undertake a planned change project.

2605X Interpersonal Dynamics

Provides an opportunity for students to gain laboratory experience in the use of different styles of leadership in group problem-solving and decision making.

Students are expected to study the theory of various techniques in supervision and planned change and then practise the application of this theory in the classroom.

2610X Industrial Relations

The institutional framework within which labour-management re-

lations are conducted: the history, philosophy and structure of the labour movement, alternative management strategy, the role of the state in labour relations and the practice of collective bargaining.

2611X The Economics of Labour Relations

The economic framework within which labour-management relations are conducted and the economic ramifications of collective bargaining: the union impact on the supply and demand for labour, wage determination, the role and determination of wage differentials, and the relationship between collective bargaining and the trade-off between full employment and stable prices.

2701X Applied Statistical Decision Theory

An introduction to the analysis of decision problems under uncertainty from the unified viewpoint of statistical decision theory with emphasis on the use of the Bayes criterion. Subjective probability and utility concepts are introduced and utilized. Examples in the field of production, marketing, finance and research are discussed.

2702X Sample Survey Theory and Its Applications

A treatment of sampling theory as it has been developed for use in sample surveys. Emphasis is on the kind of sampling conducted to obtain additional information in reducing the degree of uncertainty in decision problems. Topics include: cost and efficiency comparisons, ratio estimates, regression estimates and non-sampling errors.

2703X Technology of Management Information Systems

The complexity and ability of the technology of information transmission, processing, storage and display is studied including discussion of machine organization, system programming, multiprogramming, information storage devices, file organization and retrieval techniques, information display devices, telecommunications and programming languages.

2704X Selected Topics in Management Information Systems

The design, implementation or operation of computer-based management information systems including establishing a systems framework, planning and controlling the design process, establishing the criteria of a good design, hardware and software selection, role of simulation techniques, implementing and improving a system, use of proprietary software, documentation, staffing, training, and measuring system effectiveness.

2711X Business Cycles and Forecasting Models

Business cycle models; postwar business cycle developments in North America; seasonal adjustment and other elementary time series analysis; use of business cycle indicators, diffusion indices, and survey data in elementary forecasting models; long-range projection techniques.

2712X Econometrics and Business Forecasting

Construction of simultaneous equation forecasting models and estimation of structural parameters and reduced forms of these models; both macroeconomic and individual industry or commodity market models will be considered.

2713X Adaptive Forecasting and Time Series Analysis

Introduction to stochastic processes; the decomposition of time series by classical and spectral-analytic techniques; exponential smoothing, adaptive forecasting, and other autoregressive models, including applications to production smoothing models; evaluating alternative forecasting models.

2714X Applied Regression Analysis

Multiple regression theory and its application to estimation of parameters of models in production, marketing and finance.

3010 Advanced Managerial Economics*

A detailed examination of selected topics in optimization theory and the application of quantitative methods to managerial decision making.

3030 Financial Theory of the Firm*

Valuation theory pertinent to financial decision making in the firm. Models for both short and long-term decision making, and decision making at the project and portfolio levels for both non-financial and financial firms will be included. Problems in making the theory operational will be considered.

3050 Marketing Theory*

Designed to provide an understanding of the role of theory in the examination and treatment of marketing phenomena. Basic topics treated are: the requirements and language of theory; the theory of markets; the theory of promotion; the theory of distribution; and the theory of the firm (in terms of marketing strategy).

3090 Reading Course in Approved Field*

*Courses normally restricted to PH.D. students.

1969–70 STUDENT ENROLMENT

FROM UNIVERSITY LOCATIONS		
Canada		
Ontario	349	
Quebec	43	
Manitoba	19	
Nova Scotia	12	
Alberta	10	
British Columbia	10	
New Brunswick	6	
Saskatchewan	3	
P.E. Island	1	
	453	
United Kingdom	30	
United States	27	
India	16	
Australia	7	
Ireland	6	
Egypt	3	
Israel	3	
South Africa	3	
Italy	2	
Philippines	2	
Trinidad & Tobago	2	
Brazil	1	
France	1	
Hong Kong	1	
Hungary	1	
Malaysia	1	
Netherlands	1	
New Zealand	1	
Peru	1	
Taiwan	1	
Turkey	1	
	564	

WITH UNIVERSITY DEGREES		
Arts (B.A. and A.B.)		
Economics	81	
Political Science	19	
Other	112	
		212
Engineering (B.A.SC., B.ENG., etc.)		
Electrical	50	
Mechanical	41	
Chemical	20	
Civil	15	
Industrial	14	
Other	19	
		159
Science (B.SC., B.MATH.)		
Maths & Physics	11	
Chemistry	14	
Biological	11	
Other	37	
		73
Commerce		
B.COM.	55	
B.ADMIN., etc.	15	
		70
Agriculture (B.S.A.)		3
Pharmacy (B.SC.PHARM.)		3
Architecture (B.ARCH.)		3
Law (B.C.L. & L.L.B.)		3
Forestry (B.SC.F.)		3
Masters		
Arts	4	
Science & Engineering	11	
Other	14	
		29
PH.D.		6
		564

The Calendar of

THE INSTITUTE OF CHILD STUDY

UNIVERSITY OF TORONTO

45 Walmer Road ··· *Toronto 4, Canada*

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ADMINISTRATIVE OFFICERS

1969–1970

THE UNIVERSITY

President . . C. T. Bissell, M.A., Ph.D., D. ès L., D.Litt., LL.D., F.R.S.C.
Assistant to the President . . . . . N. S. C. Dickinson, C.D., B.A.

Executive Vice-President (Academic) and Provost . . . J. H. Sword, M.A.
Vice-Provost and Executive Assistant to the President D. F. Forster, B.A., A.M.

Executive Vice-President (Non-Academic) . . A. G. Rankin, B.Com., F.C.A.
Executive Assistant to the Executive Vice-President (Non-Academic) J. F. Brook
Vice-President (Administration) . . . . . F. R. Stone, B.Com., F.C.A.
Secretary of the Board of Governors . . . . . D. S. Claringbold
Director of Administrative Services . . . . . M. A. Malcolm, B.A.
Director of Physical Plant . . . . . F. J. Hastie, B.Sc., P.Eng.
Director of Finance . . . . . (to be appointed)

Vice-President (Health Sciences) . . . J. D. Hamilton, M.D., F.R.C.P.(C)
Vice-President (Research Administration)
G. de B. Robinson, M.B.E., B.A., Ph.D., F.R.S.C.
Director of the Office of Research Administration Miss S. Dymond, B.A., Q.C.

Vice-President and Registrar, and Secretary of the Senate
R. Ross, M.B.E., M.A.
Executive Assistant to the Vice-President and Registrar, and Assistant Secretary of the Senate . . . . . W. Kent, M.A.

Vice-President and Graduate Dean
E. Sirluck, M.B.E., M.A., Ph.D., LL.D., F.R.S.C.

Chief Librarian . . . . . R. H. Blackburn, M.A., B.L.S., M.S., LL.D.

Director of University Extension . . . . . G. H. Boyes, M.A.

Director of Admissions . . . . . E. M. Davidson, B.A.
Director of Student Awards . . . . . Miss H. L. Reimer, B.A., B.Ped.
Secondary School Liaison Officer . . . . . W. A. Hill
Director of Statistics and Records . . . J. M. Tusiewicz, M.A.Sc., M.B.A.
Director of University Health Service
G. E. Wodehouse, M.C., M.D., F.R.C.P.(C), M.R.C.P.
Assistant Director of University Health Service —Women . . . . . Miss F. H. Stewart, B.A., M.D.
Director of Career Counselling and Placement Centre A. W. Headrick, M.A.
Director of International Student Centre . . . . . Mrs. K. Riddell, B.A.
Director of the Advisory Bureau
D. J. McCulloch, B.A., M.D., D.Psych., F.R.C.P.(C)
Director of Housing Service . . . . . Mrs. M. G. Jaffary, B.A.

Director of University of Toronto Press . . . . M. Jeanneret, B.A., LL.D.

Director of Information . . . . . K. S. Edey
Director of Alumni Affairs . . . . . J. C. Evans, B.A.
Director of Development . . . . . R. L. Jones

Warden of Hart House . . . . . E. A. Wilkinson, B.A.
Director of Athletics and Physical Education —Men . . . . . W. A. Stevens, B.S.
Director of Athletics and Physical Education —Women . . . . . Miss A. Hewett, B.Ed., P.E.

ACADEMIC YEAR 1970–71

First Term 1970

Sept. 8	*Tuesday*	St. George's School opens 9 a.m.
Sept. 14	*Monday*	President's Opening Address at 2 p.m. in Convocation Hall
Sept. 16	*Wednesday*	Registration in Academic Program
Sept. 17	*Thursday*	
Sept. 21	*Monday*	Academic Term I begins
Oct. 12	*Monday*	Thanksgiving Day
Nov. 11	*Wednesday*	Remembrance Day
Dec. 18	*Friday*	St. George's School closes at 12.30 p.m.
Dec. 18	*Friday*	Academic Term I ends at 3 p.m.

Second Term 1971

Jan. 4	*Monday*	Academic Term II begins at 9 a.m.
Jan. 4	*Monday*	St. George's School reopens at 9 a.m.
Feb. 12	*Friday and*	Mid-term—St. George's School closed
Feb. 15	*Monday*	
Feb. 15 to 19		Reading Week—lectures and practicum will not be held
Mar. 19	*Friday*	St. George's School closes at 12.30 p.m.
Mar. 19	*Friday*	Academic Term II ends at 5 p.m.

Third Term 1971

Mar. 29	*Monday*	Academic Term III begins at 9 a.m.
Mar. 30	*Tuesday*	St. George's School reopens at 9 a.m.
May 17	*Monday*	Victoria Day
May 28	*Friday*	Academic Term III ends at 5 p.m.
June 9	*Wednesday*	St. George's School closes at 12:30 p.m.

Date of University commencement for Diploma in Child Study students to be announced.

STAFF OF THE INSTITUTE OF CHILD STUDY 1969–1970

Academic and Research Division

M. F. Grapko, M.A., PH.D., *Associate Professor, Acting Director*

A. Castaneda, M.A., PH.D., *Professor (cross-appointment from* O.I.S.E.)

Andrew J. Biemiller, M.SC., PH.D., *Assistant Professor and Chairman, Student Affairs*

Peter J. Gamlin, M.A., PH.D., *Assistant Professor*

Betty M. Flint, DIP.C.S., M.A., *Assistant Professor (part-time)*

D. M. Graham, M.A., PH.D., *Assistant Professor (cross-appointment from Advisory Bureau)*

J. McInnes, M.ED., ED.D., *Assistant Professor (cross-appointment from* O.I.S.E.*)*

Carroll Davis, M.A., *Acting Supervisor of Education*

Margaret L. Kirkpatrick, M.A., *Lecturer, Assistant Administrator, Dietitian*

Elda Bolton, M.A., *Lecturer*

Frances Biemiller, DIP.C.S., M.SC., *Lecturer*

Pearl Karal, M.A., *Lecturer (part-time)*

J. W. Boich, M.ED., *Special Lecturer (part-time)*

Research Associates

Robert Johnson, M.D., F.R.C.P.(C) *(part-time)*

R. G. N. Laidlaw, M.A., PH.D. *(part-time)*

Research Assistants

Mary Kilgour, R.N., DIP.C.S. *(part-time)*

Joanna Smalley, B.A. *(part-time)*

James R. Sutherland, B.A. *(part-time)*

Research Associates and Assistants (on Grants)

Barry J. Caswell, B.A.

Inta Ridler, M.A. *(part-time)*

Ulda Keleris, m.a. *(part-time)*

Ann Taylor, m.a. *(part-time)*

M. T. Zivian, m.a. *(part-time)*

Education Division

M. Cassandra Alikakos, *Instructor*

Margery de Roux, dip.c.s., *Instructor*

Karen Fisher, b.a., dip.c.s., *Instructor*

Russell D. Fleming, b.a., *Instructor*

Margaret Galloway, a.r.c.m., *Instructor*

Eleanor Hamilton, *Instructor*

Dolores Hind, *Instructor*

Jennifer Holbrook, dip.c.s., m.ed., *Instructor*

June Holley-Hime, b.a., *Instructor*

Carol P. Howitt, *Instructor*

E. A. Hunter, *Instructor*

C. J. Lemon, b.a., m.ed., *Instructor (part-time)*

Dorothy Medhurst, dip.c.s., *Instructor*

Dorothy Moncur, *Instructor*

Hilda Stollery, *Instructor*

Diana Tisdall, b.sc., dip.c.s., *Instructor*

Librarian

Miriam Herman, b.a.

Secretaries

Frances Daniels—*School Office*

Louisa Chapman—*Central Office*

Erma Ross—*Business Office*

Nadia Gaichuk—*Publications*

CHILD STUDY

The Institute of Child Study, University of Toronto, provides a centre for graduate students who are interested in the scientific study of children. The Institute, founded in 1926 for the study of child behaviour and development, was one of the first laboratories of its kind to be established on this continent.

Child study has expanded rapidly during the ensuing years and has become a matter of world-wide concern. Extensive research (both pure and applied) now in progress is accompanied by the exploratory use of scientific information in all aspects of child life: the home, the school and many special organizations devoted to the child. Child study today is an inter-disciplinary endeavour, enlisting the cooperation of scientists and professional people from many fields of study. Integration of knowledge concerning the childhood phases of human growth and development presents a new challenge for those engaged in work with children. Students of various disciplines are needed for study in the child field in order to meet the community demand for specialists who can deal effectively with a variety of research, academic and professional concerns.

In its research and academic activities the Institute of Child Study has always maintained a realistic balance of interest in theoretical approaches and practical problems related to human development. *The Institute's research programme* embodies a series of developmental studies at the infant, preschool and school age levels. In addition to such basic investigation, the Institute is engaged in the study of exploratory practices in infant care, preschool education, mental health approaches in education, children's learning, child appraisal and guidance, and parent education. Laboratory resources and child subjects for research and practice are provided by St. George's Nursery and Elementary School at the Institute. To provide a broad scope for its work the Institute also maintains many contacts with the community through its interdisciplinary staff.

The Institute's academic programme is closely allied to its function as a research centre. A central feature of this programme is the opportunity for students to participate actively in research and practice with children. The programme is arranged to accommodate graduate students who have a variety of undergraduate backgrounds, and who enter the child field for various purposes. Graduate students who have qualifications and experience in service professions may enrol for studies particularly appropriate to their needs. A special plan of study has been designed for teachers. The academic programme for all students includes courses which are concerned with basic theory and research as well as courses which are directed toward the application of scientific knowledge.

Qualified students may participate in the academic programme of the Institute under one of the following arrangements:

1. *As a full-time student* enrolled for the Diploma in Child Study awarded by the University of Toronto
2. *As a special student* enrolled in one or more courses
3. *As a graduate student from another department* attending courses or making use of the Institute's research facilities by arrangement through his department.

4. *As an associate or intern* taking part in activities of the Institute through special arrangements.

COURSES OF STUDY

100 Child Development
101 Research Methods and Psychological Measurement with Children
102 Personality Development (not offered in 1970–71)
103 Introduction to Cognitive Development
104 Individual Reading or Research
105 The Influence of Early Experiences
106 Family Dynamics
108 The Concept of Mental Health
109 Development of Motivation
110 Introduction to Child Behavior Disorders and Their Treatment
111 Introduction to the Psychology of Language
206 Application of Testing and Developmental Assessment
207 Observational Assessment of Young Children
208 Current Trends in Elementary Education
209 Developmental Approach to Children's Nutrition
210 Development Through Play
211 Introduction to Preventive and Remedial Procedures in Education
212 Culture and Socialization
214 Group Education: Methods and Techniques
215 Current Trends in Preschool Education
301 Infant Studies
302 Studies in Early Childhood
303 Psychology in Education
304 Studies in Child Appraisal and Guidance
305 Child Research
306 Studies in Family Life

Courses in the 100 group deal primarily with theory and research and are designed as foundation courses for the 200 and 300 groups. Courses include laboratory study of children.

Courses in the 200 group are designed as seminars for advanced study in the interpretation of child behaviour and development and are related to courses in the 300 group.

Courses in the 300 group provide concentrated study in applied areas of child rearing, education and guidance. Each course includes seminar work, investigation, and extensive field practice, which are adapted to student needs.

The Institute reserves the right to provide or withdraw any course to meet special circumstances.

THE DIPLOMA PROGRAMME

The University of Toronto awards a Diploma in Child Study to students who complete a full programme of studies as prescribed.

The programme is intended for men and women who plan to specialize in the child field and includes intensive study in foundation and applied subjects.

Each student concentrates in one area selected from the 300 group. Each concentration includes certain other required courses (exceptions being made when a student can demonstrate competence in a required course).

Requirements for Admission to the Diploma Programme:

A Bachelors' degree, with B standing,

or

Professional teacher qualifications with three or more years' teaching experience in addition to a Bachelor's degree and academic and professional standing as approved by the Admissions Committee.

Course Regulations for the Diploma in Child Study:

In order to qualify for the Diploma in Child Study a student must successfully complete fourteen course credits' work, including all courses required by his concentration.

One course credit is given for a standard course requiring two hours per week of lectures plus readings, projects and, in some cases, field work.

Credits, per course, are listed under "Description of Courses."

A student with advanced academic or professional qualifications may be allowed credit toward the Diploma for his previous work.

A student may elect or be advised to take one or more approved courses in another division of the University for credit toward the Diploma.

The Diploma programme normally requires two years of full-time study.* The first year consists of foundation courses and introductory applied work in teaching, testing, and other aspects of the student's area of concentration. The second year will be devoted to advanced work in the student's area of concentration, plus additional courses selected by the student.

It is expected that a student will select his area of concentration from the 300-course group when he applies to enter the Diploma programme. A student who is uncertain of his choice should consult with the Chairman of Student Affairs. Staff will be available for consultation regarding course requirement and selec-

*Concentration 303 requires 7 credits' work. This concentration is open only to experienced teachers.

tion during the academic year prior to enrolment. Students living at a distance should arrange an interview in September in advance of registration.

Regulations Regarding Standing for the Diploma in Child Study

To receive the Diploma a student will complete satisfactorily all parts of his prescribed programme. Course credits are based on assignments throughout the year and on participation in seminars, projects and practicum. Each student will complete a *prescribed period of field practice* as part of his Diploma programme. A student must show proof of competence in his area of concentration.

If a student fails to receive credit in one or more courses he may re-apply for admission and his application will be considered by the Admissions Committee.

Representation from students who because of illness or other causes require special consideration should be made in writing to the Chairman of Student Affairs before the close of the academic year.

SPECIAL PROGRAMMES OF STUDY

A candidate may apply for enrolment in one or more courses as a *special student not proceeding to a Diploma.*

Admission requirement is a Bachelor's degree with B standing. Enrolment is possible in any course in the 100 group for which previous qualifications are approved. Enrolment in the 200-course group may require qualifying study in a foundation course (100 group). Only a student already advanced in child study is eligible to enrol as a special student in a concentration course (300 group).

Special programmes of study do not provide credit toward the Diploma.

ENROLMENT PROCEDURES

The number of students who can be enrolled in the diploma programme and as special students is limited. To ensure full consideration, applications for admission should be submitted by *June 1* of the calendar year in which the student wishes to register. In the event that a space is not immediately available a candidate approved as eligible will be placed on a waiting list for possible vacancies. Closing date for applications is July 15.

Candidates for the diploma programme or special programmes should approach the Secretary of the Institute for application forms. An applicant will arrange that *an official transcript* from the university he is attending, or from which he has graduated, be submitted at the time of application, along with an official record of other advanced academic and professional courses for which he holds credit. An applicant who is in his graduating year is responsible for arranging that his final transcript be forwarded as soon as it is available.

When making application a candidate will provide the names of two persons as references who are familiar with his academic and vocational pursuits.

An interview is required of all candidates before consideration of their application unless distance makes this impossible. In the latter case, a candidate with satisfactory qualifications and references may be accepted on probation.

Facility in English Requirement

Facility in the use of the English language is essential for graduate study at the Institute of Child Study.

Applicants from universities outside Canada whose admission has been recommended and whose native tongue is not English will be required to demonstrate their competence in the English language. Normally this is best done by means of the tests administered by the English Language Institute, University of Michigan, or by the University of Cambridge, for its Certificate of Proficiency in English or by the Test of English as a Foreign Language of the Educational

Testing Service of Princeton, New Jersey. Further information about the administration of the tests can be secured from either (*a*) the local centre of the United States Information Service, or, in cases of difficulty, the English Language Institute, University of Michigan, Ann Arbor, Michigan, U.S.A.; or (*b*) the local centre of the British Council, or, in cases of difficulty, the Secretary (Examinations in English), 47 Bateman Street, Cambridge, England; or (*c*) TOEFL, Educational Testing Service, Princeton, New Jersey, U.S.A. Where the language of instruction in the undergraduate programme has been English, the Institute of Child Study is prepared to consider other evidence of proficiency in the use of English language than that provided by the tests referred to above.

DESCRIPTION OF COURSES

100. *Child Development* — 1 credit. Provides an overview of cognitive development, including perception, representation, language, learning; and social and personality development, including emotions, social behaviour and personality variables. Factors affecting various aspects of development will be discussed, as well as applied aspects of the study of child development.

101. *Research Methods and Psychological Measurement with Children* — 1 credit. Psychological measurement, statistical analysis, research techniques and research design will be illustrated through student projects and readings.

102. *Personality Development* — 1 credit. Major critical developments characteristic of infancy through adolescence are examined. Review of theoretical contributions to personality development. (Not offered, 1970–1971.)

103. *Cognitive Development* — 1 credit. An investigation of the basic concepts in cognitive psychology. Focussed on the developmental aspects of cognitive psychology in student papers and journal readings.

104. *Individual Reading or Research* — ½ to 2 credits. Students may plan individual reading, field study, or research projects with members of staff.

105. *The Influence of Early Experiences* — 1 credit. An examination of the development of children from birth to two years of age with a view to understanding normal development and recognizing deviations from it. A study of the effects of pre-natal influences, birth trauma, and post-natal experiences on later personality. An investigation of the research literature having a bearing on these factors. Observations of infants in various settings.

106. *Family Dynamics* — 1 credit. An examination of family interaction processes, their functions, and family breakdowns. Observation of normal families and family counselling will be provided.

108. *Concept of Mental Health* — 1 credit. Study of theoretical and research approaches to mental health in childhood and adulthood. Examination of psychological development and deviation from mental health.

109. *Development of Motivation* — ½ credit. Seminar on research and descriptive literature on the development of motives in children, and changes in their motivational systems as they grow older. An observation programme may also be evolved.

110. *Introduction to Child Behavior Disorders and their Treatment* — 1 credit. An introduction to the nature, causes, diagnosis and treatment of child behaviour disorders. (May not be offered in 1970–1971.)

111. *Introduction to the Psychology of Language* — ½ credit. An enquiry into theories of language reception and production. Models of language acquisition. Theories of language comprehension.

206. *Applications of Testing and Developmental Assessment* — 2½ credits. A psychological framework for observing, measuring and testing. Assembling information and reaching reasonable interpretive conclusions on individual children. Techniques and programmes developed as a result of interpretive conclusions. Seminars.

207. *Observational Assessment of Young Children* — ½ credit. Classroom observations of individual children and teachers, and the development of in-school programmes for specific children.

208. *Current Trends in Elementary Education* — ½ credit. Study and observation of educational projects. Practicum within St. George's School. Seminars.

209. *Developmental Approach to Children's Nutrition* — ½ credit. Psychological principles applied to the feeding of children from infancy to adolescence; child guidance in home, school, and community. Seminars.

210. *Development Through Play* — ½ credit. Psychological approaches to play. A study of programming for young children. Seminars.

211. *Introduction to Preventive and Remedial Procedures in Education* — 1 credit. Survey of diagnostic materials in the core subjects of the elementary school. Techniques of preventive and remedial teaching. Practicum and Seminars.

212. *Interpersonal Process* — ½ credit. A seminar course in which the participants may use the seminar group itself to explore the nature of their reaction to, and effects upon, other persons. Theoretical formulations of interpersonal process such as those of Rogers, Goffman, Laing, etc., may be considered.

214. *Group Education: Methods and Techniques* — ½ credit. Planning for group discussion with parents, young adults or adolescents. Appraisal of materials and related literature. Seminars.

215. *Current Trends in Preschool Education* — ½ credit. A seminar course on recent issues and emerging philosophies in the education of young children. New preschool programmes and teaching techniques. Field visits, lectures and discussions. (May not be offered in 1970–1971.)

In addition to courses offered at the Institute of Child Study, students registered for their second year in concentrations 304 and 306 may arrange to take a course in the Department of Special Education at the Ontario Institute for Studies in Education (the Graduate Department of Educational Theory, University of Toronto). These courses concern various types of handicaps (physical, mental retardation, emotional disturbance, learning disabilities) as well as the education of gifted children.

301. *Infant Studies* — 1 credit, first year; 2 credits, second year. Specialized study of infancy with emphasis on the mental health aspects of child rearing and the significance of this period in the child's total development. A survey of psychological research studies of infants in homes and institutions, cultural studies of infant rearing, animal studies. Observation in normal and foster homes, hospitals, receiving and treatment centres accompanied by examination of procedures in the light of scientific knowledge of infant development. Consideration of parent and adult preparation to meet the psychological needs of infancy.

Study of individual differences and atypical infant conditions, infant developmental diagnosis and test measures. Demonstration and practice in the administration of tests, interpretation of results and preparation of reports. Demonstration and practice in conducting parent interviews, and in remedial programming. Practice with preschool children and pertinent observations of older children.

Prescribed field practice will be carried out during the academic year with a concentrated period during the third term.

302. *Studies in Early Childhood* — 2½ credits, first year; 2½ credits, second year. Specialized study of the preschool child with emphasis on significant aspects of early learning. Subjects of study will include principles and practices of preschool education; mental health considerations in home and school; individual differences and normal developmental difficulties; psychological understanding of children who are handicapped, disadvantaged or otherwise lagging in their development. Provision will be made for weekly practice of 8 to 10 hours in the Institute's Nursery School and for further concentrated period of field practice during the 2 years; a study of community services for young children; participation in work with parents; observation and appraisal of individual children; examination of therapeutic procedures and practices; study and observation of current preschool techniques. Experience will also be provided in programmes for exceptional children and in areas of special interest to the student.

303. *Psychology in Education* — 1 credit (one year programme). This course is designed for teachers. Study is focused on the application of psychological principles in the school setting. Educational practices are examined in conjunction

with scientific knowledge of child behaviour and development. Current issues related to education are considered in the light of psychological studies. Individual study plans are worked out for each student in this programme, including tutorials, field work and courses.

Observation and participation may be arranged in consultation with Institute staff members in a variety of educational settings, including experimental schools, guidance programmes, adult and child interviewing, schools in deprived areas and other settings, as well as in St. George's School at the Institute.

304. *Studies in Child Appraisal and Guidance* — 2½ credits, first year; 1 credit, second year. Theories and techniques of psychological assessment of individual children of all ages. Instruction and practice in the administration and interpretation of tests of general intelligence, special abilities and disabilities, and achievement. Introduction to personality assessment and infant testing.

The psychological problems of childhood will be considered: developmental difficulties of normal children and mental health considerations; the effects of various handicaps and/or psychological disturbance; certain areas where problems occur—home, school, peer group, atypical environmental factors. Suitable preventive and therapeutic measures will be examined.

Laboratory and field projects will provide practical experience in the psychological evaluation of both normal and atypical children. Classroom observation and participation will be used as a basis for the study of psychological factors underlying the normal learning processes and the diagnosis and remediation of learning disorders. Students will participate with the child guidance teams planning remedial programmes in schools or hospitals or treatment settings. Student interests will be discussed in planning practical experience.

Prescribed field work will be carried out during the year with a concentrated period during the third term. Summer internship may be advised.

305. *Child Research* — 1 credit, first year; 2 credits, second year. This course is offered for post-graduate students who already have considerable background in research design and wish to apply this in the field of Child Study. A student in this concentration will take part in the research programme of the Institute and will design and complete satisfactorily an original piece of research.

Provision will be made for observation and work experience with normal and exceptional children in life situations and experimental settings.

An approved selection from the 100- and 200-course groups will provide the necessary background in child study and allow the student to examine in detail any particular scientific or applied area of his choice. A student may be required to take outside courses in research, design or statistics as part of his Diploma credit. He may wish to select subjects in other departments.

306. *Studies in Family Life* — 1 credit, first year; 2 credits, second year. Intensive study of parents and children in the home and the influence of family life on

child development. Consideration of parent education and its preventive function as guidance toward healthy family relationships. Childhood and adolescent difficulties with principles of guidance for parents as their roles change during the emancipation process. Knowledge and understanding of exceptional children and their families. Investigation of methods of working with parent and family groups including interviewing and counselling.

Practical experience with children in the Institute's school and in specialized centres. Supervised experience in use of data such as reports, tests, in parental guidance programmes. Participation in parent group education and in interviewing children and adults. Survey of child and family agencies.

Prescribed field practice will be carried out during the academic year, with a concentrated period in the third term.

COURSE FEES

A student whose application has been accepted for admission to the Institute of Child Study is required to pay to the Chief Accountant of the University at least the First Term Instalment of fees on or before the opening date of the session. This must be done before the Secretary of the Institute can issue his card of admission to lectures.

The Second Term Instalment of Fees is payable on or before the due date without further notice from the University. After this date an additional charge of $3 per month or portion thereof (not exceeding $10) will be imposed until the whole amount is paid.

In order to avoid delay in registration at the opening of the session, it is recommended that at least the First Term Instalment of fees be forwarded by mail as early as possible in September together with a form to be provided by the Secretary of the Institute.

Any student who registers after the last date for normal registration in his or her own faculty or school is required to pay a late registration fee of $10 plus $1 for each day of delay to a maximum of $20.

University fees are payable at the Office of the Chief Accountant. Cheques in payment of fees are made payable to the University of Toronto at par in Toronto.

First year

	Academic fee	*Incidental fees*	*Total fees*	*First Instalment due on or before date of registration*	*Second Instalment*	*Due date*
Men	$375	$42	$417	$230	$190	Jan. 20
Women	375	22	397	210	190	Jan. 20

Second year

	Academic fee	*Incidental fees*	*Total fees*	*First Instalment due on or before date of registration*	*Second Instalment*	*Due Date*
Men	$375	$42	$417	$230	$190	Jan. 20
Women	375	22	397	210	190	Jan. 20

Special

	Academic fee	*Incidental fees*	*Total fees*	*Due on or before date of registration*
First subject	$65	$22	$87	$87
Each additional subject	65	....	65	65

STUDENT FINANCIAL AID

Bursaries

A Toronto Nursery Education Association Bursary to the value of $300 is being offered during 1970–71 to students enrolled full-time, whose area of concentration in the Diploma Course is in Early Childhood. Application forms may be obtained from the Secretary, Institute of Child Study.

In-Course Bursaries

Students registered in the Institute who have satisfactory academic standing for the year immediately preceding may apply for assistance from a limited number of in-course bursary funds administered by the Office of Student Awards, University of Toronto. Application should be made to the Secretary of the Institute of Child Study before October 15 on the regular University in-course award form.

Ontario Student Awards Programme

All students who are residents of Ontario and who satisfy the admission requirements of a Canadian university or an eligible post-secondary institution in Ontario may apply for an award under this Programme. To receive an award a student must establish a need for assistance and enrol in an eligible institution in a course other than Divinity in the year of award. An award under this Programme will be made to the extent of established need in a combination of a non-repayable grant and a Canada Student Loan. Application forms are available at secondary schools and all post-secondary eligible institutions.

Canada Student Loans Plan

Full details of this Plan are available in a brochure issued by the Government

of Canada which may be obtained at all eligible post-secondary institutions and secondary schools in Ontario. Students not eligible under the Ontario Student Awards Programme may apply for a Canada Student Loan provided they are attending an institution in Canada or abroad which has been designated as eligible for Canada Student Loans only. The application form for the Ontario Student Awards Programme is also used for the Canada Student Loans Plan.

Ontario Mental Health Bursaries

Students wishing to work in the field of Child Appraisal and Guidance may inquire of the Chairman of Student Affairs concerning grants in aid *for their second year of study.* Such aid is offered on condition that the student work in mental health settings in Ontario for a period of time after Diploma study is completed.

HEALTH SERVICE AND REQUIREMENTS

Since physical stamina and freedom from disabilities are essential for successful work in the school laboratory, the student is expected to discuss this matter before selection of his area of concentration.

In order to work with children it is necessary for the student to be in good physical and mental health and free from any form of infectious disease. A certificate of successful vaccination against smallpox within the previous three years must be produced, otherwise vaccination should be arranged for at the University Health Service. Chest X-ray for Tuberculosis is also required for all students, unless they produce proof of a normal chest X-ray or a negatiye reaction to Tuberculin skin testing within the previous six months.

Each student not domiciled in Canada must present with his application a certificate stating that he is free from disease, including Tuberculosis. Interim hospital insurance for three months following his arrival in Canada is compulsory. Details may be obtained from the Secretary of the Institute of Child Study.

The University Health Service is located at 256 Huron Street. It is open between the hours of 9 a.m. and 5 p.m. daily (Saturdays: 9 a.m. to 12.30 p.m.). Physicians' advice may be sought at the Health Service or by telephoning the Infirmary at 928–2458, or by calling 928–2011 and asking for Health Service Physician. Psychiatric Service is obtained at 2 Bancroft Street, phone 928–2441.

UNIVERSITY ADVISORY BUREAU

One of the functions of the Advisory Bureau is to provide a centre where members of the University community can drop in on an informal basis to talk about personal and general concerns. The Bureau is located at 631 Spadina Avenue, on the north-east corner of Harbord and Spadina, telephone 928–2684.

HOUSING SERVICE

For the convenience of those students who are not able to find accommodation in the University and College residences, the University maintains a listing of rooming houses, flats, apartments and houses. Information may be obtained through the Housing Service office, University of Toronto, 49 St. George Street, Toronto 4, telephone 928–2542.

Off-campus housing of this nature is not subject to University regulation; however, every effort is taken to make the information on the accommodation as complete as possible and students are encouraged to assist in this effort by reporting on the quality of the accommodation that they have occupied.

CAMPUS CO-OPERATIVE RESIDENCE, INC. offers residence and apartment accommodation for graduate and undergraduate students. Total occupancy is 300 in residence, half male, half female, and 50 in apartments. Meals are provided, and non-residents are invited to eat at the Co-op Dining Rooms. Since the University of Toronto has no official connection with Campus Co-operative Residence, Inc., inquiries should be addressed direct to:

Campus Co-operative Residence, Inc.
341 Bloor St. W., Toronto 5, Ontario
Tel. 921–3168

ROCHDALE COLLEGE offers single and double rooms, suites and apartments at reasonable rates. Total accommodation is about 850 students, both male and female. A large cafeteria is contained within the building. Students may take advantage of the educational programme of Rochdale College on either a full or part-time basis if they so desire. Rochdale College is operated on the co-operative system.

Since the University of Toronto has no official connection with Rochdale College all inquiries should be addressed direct to:

Rochdale College, Reservations Office
341 Bloor St. W., Toronto 5, Ontario
Tel. 921–3168

MARRIED STUDENTS APARTMENTS—One and two-bedroom units are available in two high-rise apartments within walking distance of the University. Yearly leases are required. Brochures and application forms may be obtained through the Housing Service Office, University of Toronto, Toronto 4. Telephone 928–2542.

The ST. GEORGE GRADUATE RESIDENCE, located at 321 Bloor Street West, at St. George Street, has accommodation for approximately 300 single graduate and post-baccalaureate students—both men and women. It is open throughout the entire year and is administered by the School of Graduate Studies through

the Warden, Dr. R. T. H. Alden. Enquiries concerning the residence are invited and should be directed to:

The Warden
St. George Graduate Residence
University of Toronto
Toronto 5, Ontario

WOMEN'S ATHLETIC ASSOCIATION

Women students enrolled at the Institute of Child Study are eligible for the Graduate Programme of the Women's Athletic Association of the University of Toronto. Swimming, tennis, badminton, golf, exercise and contemporary dance are among the activities offered. For further information and fees inquire at Room 102 in the Benson Building, 320 Huron Street, or Telephone 928–3441.

HART HOUSE

Hart House recreation and athletic facilities are available to men students. For further information and fees inquire at Porter's desk or call 928–2447.

LIBRARY FACILITIES

The Institute maintains a specialized library for use of its staff, students and parents. It consists of books, pamphlets, periodicals, and technical materials, dealing with all aspects of child study and its application. It is necessary that students also use University and other professional library facilities. Staff and graduate students from other departments may use the Institute library.

RESEARCH FACILITIES

The Institute of Child Study is a research centre for the study of children's development. Facilities for conducting these studies include the Institute's own laboratory school, St. George's, and many associated centres.

The laboratory school, which is made possible through the support of the University of Toronto, registers children for admission shortly after birth. Each year twenty children enter the junior nursery and most of these continue through the school to grade VI. St. George's School is particularly suitable for longitudinal studies of an intensive nature which focus on a relatively small homogeneous group of subjects. It is also well adapted to investigating the effect of educational practices and programmes.

During its forty years of growth, the Institute has formed many associations with centres in the community outside its own school. Research may be carried out in these centres when subjects of contrasting types are required or when larger populations are needed.

The Institute has continuing access to private and elementary schools in the immediate neighbourhood, to schools in the Metropolitan Toronto area on request, to nursery schools, day nurseries and day care centres, to well baby clinics and infant care centres. It also has associations with centres for handicapped, retarded, disturbed and hospitalized children, and other community organizations. Many of these centres welcome students as observers and researchers.

MAJOR AREAS OF RESEARCH

The major areas in which research is in progress are listed below. These are followed by the names of the chief investigator(s) and associated personnel and by the titles of the main studies in each area which are currently being pursued. Studies which are supported by the Ontario Mental Health Foundation are marked (OMHF); those supported from the National Health and Welfare Grants (H&W); those studies whose subjects are mainly children registered in St. George's School of the Institute are marked (ICS). Major publications only are listed.

I *Infancy* — Professor Betty M. Flint, Miss Mary Kilgour, Mrs. Ann Taylor.

Studies in Progress

A longitudinal study of maternally deprived children reared in an institution during infancy. Intensive records are kept on 31 children placed in adoptive or foster care after a period of therapy within the institution (H&W).
An exploration of the validity and reliability of the Infant Security Scale (OMHF).
Reliability and validity factors in infant testing.

Publications

Flint, Betty M. *The Security of Infants.* Toronto: University of Toronto Press, 1959, pp. x, 134.
—— *The Child and the Institution: A Study of Deprivation and Recovery.* University of Toronto Press, 1966, pp. 200.
Taylor, Ann. *Institutionalized Infants' Concept Formation Ability.* J. of Orthopsychiatry, Jan. 1968, Vol. 38, No. 1.
—— *Deprived Infants: Potential for Affective Adjustment in Later Years.* J. of Orthopsychiatry, Oct. 1968, Vol. 38, No. 5.

II *Parent Child Inter-relationships* — Mrs. Carroll Davis.

Studies in Progress

The influence of the child's emancipating in the home on his present and future school adjustment, with emphasis on interrelationships between home

mental health (emancipation status) and cognitive and social development in school (OMHF).

Publications

Davis, Carroll. *Room to Grow.* Toronto: University of Toronto Press, 1966, pp. 308.

III *Language* – Professor P. Gamlin, Associates: Mr. Barry Caswell and Mrs. M. T. Zivian.

Studies in Progress

Investigation of linguistic and psychological cues utilized in sentence comprehension. Training programmes for both listening and reading comprehension skills will be designed. Assessment of training programmes to teach skills involved in special comprehension.

Publications

Suci, G., Ammon, P., and Gamlin, P. *The Validity of the Probe-latency Technique for Assessing Structure in Language.* Language and Speech, 1967, 10, 69–80.

Gamlin, P. *Sentence Processing as a Function of Syntax, Short-term Memory Capacity, The Meaningfulness of the Stimulus and Age* (in press).

IV *Psychological Security* – Professor M. F. Grapko.

Studies in Progress

Further validation studies of the Primary and Elementary Forms of the Institute of Child Study Security Scales; also include study on ecological variables, etc.

Publications

Blatz, W. E., *Human Security: Some Reflections.* Toronto: University of Toronto Press, 1966, pp. 152.

Grapko, M. F. *The Institute of Child Study Security Scale: Elementary Form* (available from the Vocational Guidance Bureau, The College of Education, 321 Bloor Street West, Toronto).

——— *The Construction of a Primary Form of the Institute of Child Study Security Test.* Bulletin of the Institute of Child Study, 1965, Vol. 27, No. 4.

V *Nutrition Studies* – Mrs. Margaret Kirkpatrick.

Studies in Progress

Study of eating habits related to children's development in the Nursery School. A method for studying children's food preferences (ICS).

Publications

Kirkpatrick, M. *Feeding the Pre-school Child.* Toronto: Copp-Clark, 1963, pp. 66.

VI *Reading Development* – Professor A. Biemiller.

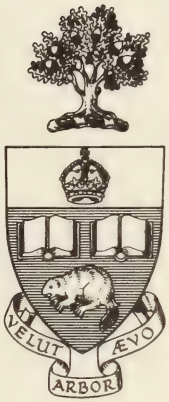
Studies in the development of the use of contextual and graphic information for word identification at grades 1 through 6. Special emphasis is given to beginning and remedial readers (ICS).

PUBLICATIONS OF THE INSTITUTE

Members of the Institute staff have published a number of books, research articles and guidance pamphlets. Lists of Institute publications are available on request.

UNIVERSITY OF TORONTO

CALENDAR



Faculty of Dentistry

1970-1971

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CALENDAR FOR 1970–1971

THE FACULTY OF DENTISTRY

1970			
March	24–	*Tuesday–*	Annual examinations – Fourth Year.
April	2	*Thursday*	
April	24–	*Friday–*	Annual examinations – First and Second
May	5	*Tuesday*	Years.
May	4–	*Monday–*	Annual examinations – Third Year.
	8	*Friday*	
May	18	*Monday*	Victoria Day. University buildings closed.
May	29	*Friday*	Convocation.
June	26	*Friday*	Clinics close. Third Year students finish.
June	30	*Tuesday*	Last day for receiving applications for supplemental examinations.
July	1	*Wednesday*	Dominion Day. University buildings closed.
Aug.	3	*Monday*	Civic Holiday. University buildings closed.
Aug.	6–	*Thursday–*	Supplemental and Qualifying examinations
	14	*Friday*	(approximate dates).
Sept.	7	*Monday*	Labour Day. University buildings closed.
Sept.	8	*Tuesday*	Fourth Year: registration (p.m.)
Sept.	9	*Wednesday*	Fourth Year: classes begin.
Sept.	17	*Thursday*	First Year: registration (p.m.)
Sept.	18	*Friday*	Second Year: registration (a.m.) Third Year: registration (p.m.)
Sept.	21	*Monday*	First, Second and Third Years: classes begin.
Oct.	6	*Tuesday*	Meeting of Faculty Council, 7 p.m.
Oct.	9	*Friday*	Meeting of the Senate.
Oct.	12	*Monday*	Thanksgiving Day. University buildings closed.
Nov.	11	*Wednesday*	Remembrance Day.
Nov.	13	*Friday*	Meeting of the Senate.
Nov.	24	*Tuesday*	Meeting of Faculty Council, 7 p.m.
Dec.	11	*Friday*	Meeting of the Senate.
Dec.	18	*Friday*	Term ends at 5 p.m.
Dec.	25	*Friday*	Christmas Day. University buildings closed.
1971			
Jan.	1	*Friday*	New Year's Day. University buildings closed.
Jan.	4	*Monday*	Last day for receiving applications for admission to Third and Fourth Years.

Jan.	4	*Monday*	Second term begins.
Jan.	8	*Friday*	Meeting of the Senate.
Jan.	26	*Tuesday*	Meeting of Faculty Council, 7 p.m.
Feb.	12	*Friday*	Meeting of the Senate.
Feb.	15	*Monday–*	Study Week for First and Second Years of
	19	*Friday*	D.D.S. course.
March	1	*Monday*	Last day for receiving applications for admission to First and Second Years.
March	12	*Friday*	Meeting of the Senate.
March	16	*Tuesday*	Meeting of Faculty Council, 7 p.m.
April	8	*Thursday*	Meeting of the Senate.
April	9	*Friday*	Good Friday. University buildings closed.
May	4	*Tuesday*	Meeting of Faculty Council, 7 p.m.
May	14	*Friday*	Meeting of the Senate.
May	24	*Monday*	Victoria Day. University buildings closed.
May	28	*Friday*	Start of University Commencement.
June	11	*Friday*	Meeting of the Senate.
June	25	*Friday*	Clinics close. Third Year students finish.
June	30	*Wednesday*	Last day for receiving applications for supplemental examinations.
July	1	*Thursday*	Dominion Day. University buildings closed.

ADMINISTRATIVE OFFICERS

1969–1970

THE UNIVERSITY

President . . C. T. Bissell, M.A., Ph.D., D. ès L., D.Litt., LL.D., F.R.S.C.
Assistant to the President . . . . . N. S. C. Dickinson, C.D., B.A.

Executive Vice-President (Academic) and Provost . . . J. H. Sword, M.A.
Vice-Provost and Executive Assistant to the President D. F. Forster, B.A., A.M.

Executive Vice-President (Non-Academic) . . A. G. Rankin, B.Com., F.C.A.
Executive Assistant to the Executive Vice-President (Non-Academic) J. F. Brook
Vice-President (Administration) . . . . . F. R. Stone, B.Com., F.C.A.
Secretary of the Board of Governors . . . . . D. S. Claringbold
Director of Administrative Services . . . . . M. A. Malcolm, B.A.
Director of Physical Plant . . . . . F. J. Hastie, B.Sc., P.Eng.
Director of Finance . . . . . (to be appointed)

Vice-President (Health Sciences) . . . J. D. Hamilton, M.D., F.R.C.P.(C)
Vice-President (Research Administration)
G. de B. Robinson, M.B.E., B.A., Ph.D., F.R.S.C.
Director of the Office of Research Administration Miss S. Dymond, B.A., Q.C.

Vice-President and Registrar, and Secretary of the Senate
R. Ross, M.B.E., M.A.
Executive Assistant to the Vice-President and Registrar, and Assistant Secretary of the Senate . . . . . W. Kent, M.A.

Vice-President and Graduate Dean
E. Sirluck, M.B.E., M.A., Ph.D., LL.D., F.R.S.C.

Chief Librarian . . . . . R. H. Blackburn, M.A., B.L.S., M.S., LL.D.

Director of University Extension . . . . . G. H. Boyes, M.A.

Director of Admissions . . . . . E. M. Davidson, B.A.
Director of Student Awards . . . . . Miss H. L. Reimer, B.A., B.Ped.
Secondary School Liaison Officer . . . . . W. A. Hill
Director of Statistics and Records . . . J. M. Tusiewicz, M.A.Sc., M.B.A.
Director of University Health Service
G. E. Wodehouse, M.C., M.D., F.R.C.P.(C), M.R.C.P.
Assistant Director of University Health Service —Women . . . . . Miss F. H. Stewart, B.A., M.D.
Director of Career Counselling and Placement Centre A. W. Headrick, M.A.
Director of International Student Centre . . . . . Mrs. K. Riddell, B.A.
Director of the Advisory Bureau
D. J. McCulloch, B.A., M.D., D.Psych., F.R.C.P.(C)
Director of Housing Service . . . . . Mrs. M. G. Jaffary, B.A.

Director of University of Toronto Press . . . . M. Jeanneret, B.A., LL.D.

Director of Information . . . . . K. S. Edey
Director of Alumni Affairs . . . . . J. C. Evans, B.A.
Director of Development . . . . . R. L. Jones

Warden of Hart House . . . . . E. A. Wilkinson, B.A.
Director of Athletics and Physical Education —Men . . . . . W. A. Stevens, B.S.
Director of Athletics and Physical Education —Women . . . . . Miss A. Hewett, B.Ed., P.E.

ADMINISTRATIVE STAFF
1969–1970

THE FACULTY OF DENTISTRY

Acting Dean and Director of Clinics ..... P. G. Anderson, D.D.S.
Secretary ..... A. G. Read
Associate Dean and Director, Division of Postgraduate Dental Education
A. M. Hunt, D.D.S., D.D.P.H., M.Sc.D.
Director, Division of Dental Hygiene ..... Marjorie Jackson, D.D.S.
Library Chairman ..... J. G. Dale, B.A., D.D.S., F.R.C.D.(C)
Staff Librarian ..... Miss P. M. Smith, B.A., B.L.S.

CORRESPONDENCE

Communications relating to standing, curricula, instruction and examinations in the Faculty of Dentistry are to be addressed to the Dean of the Faculty of Dentistry, 124 Edward Street, Toronto 101; communications relating to entrance requirements and admission to the course in dentistry are to be addressed to the Secretary, Faculty of Dentistry.

TEACHING STAFF—DENTISTRY

Professors

Anderson, P. G., D.D.S.
Acting Dean, Professor of Operative Dentistry and Director of the Clinic

Beagrie, G. S., L.D.S., R.C.S., F.D.S., R.C.S., D.D.SC.(EDIN.)
Assistant Director, Division of Postgraduate Dental Education (Clinical Sciences)

Davey, K. W., D.D.S., M.SC.D., F.R.C.D.(C)
Professor of Paedodontics and Chairman of the Department

Downton, E. P., D.D.S., B.SC.D., F.R.C.D.(C)
Professor of Prosthodontics

Ellis, R. G., D.D.S., M.SC.D., F.D.S., R.C.S., LL.D.
Professor of Operative Dentistry

Hibberd, J. H., B.D.S.(MELBOURNE), D.D.S.(TOR.), M.D.SC.(MELB.), F.A.C.D.S.
Professor of Restorative Dentistry and Chairman of the Department

Hunt, A. M., D.D.S., D.D.P.H., M.SC.D.
Director, Division of Postgraduate Dental Education; Director, Division of Dental Research

Hunter, H. A., D.D.S., M.SC.D.
Professor of Oral Pathology, Assistant Professor of Pathology (Medicine)

Jackson, Marjorie, D.D.S.
Professor of Dentistry; Director, Division of Dental Hygiene.

Kreutzer, J., D.D.S., B.SC.D.
Professor of Preventive Dentistry and Chairman of the Department

Locke, R. S., D.D.S.(TOR.), B.S.(SASK.), M.S.(PITT.)
Professor of Dental Anaesthesia and Chairman of the Department

MacKay, W. D., D.D.S.
Professor of Dental Materials and Chairman of the Department

Madlener, E. M., TANDARTS(UTR.), D.D.S., M.SC.D.
Professor of Bacteriology

Main, J. H. P., B.D.S.(EDIN.), F.D.S., R.C.S.(EDIN.), PH.D.(EDIN.), M.R.C.PATH.
Professor of Dentistry

Melcher, A. H., B.D.S.(RAND), H.D.D.(RAND), M.D.S.(RAND), PH.D.(LOND.)
Professor of Dentistry

Nikiforuk, G., D.D.S., M.S.(ILL.)
Assistant Director, Division of Postgraduate Dental Education (Basic Sciences)

Pedler, J. A., B.D.S., M.R.C.S., L.R.C.P., M.D.S., F.D.S., R.C.S.
Professor of Oral Diagnosis and Chairman of the Department

Poyton, H. G., L.D.S., F.D.S.(LOND.), H.D.D.(EDIN.)
Professor of Dental Radiology and Chairman of the Department

Smith, D. C., B.SC.(LOND.), M.SC.(LOND.), PH.D.(MAN.)
Professor of Dentistry

Smylski, P.T., D.D.S.(ALTA.), DIP. ORAL SURG., F.R.C.D.(C)
Professor of Oral Surgery and Chairman of the Department

Ten Cate, A. R., B.SC., PH.D., B.D.S.(LOND.)
Professor of Dentistry; Assistant Professor of Anatomy (Medicine)

*Twible, R. L., D.D.S., B.SC.D., F.R.C.D.(C)
Professor of Prosthodontics and Chairman of the Department
Williams, C. H. M., D.D.S., B.SC.D., F.R.C.D.(C)
Professor of Periodontics and Chairman of the Department
Woodside, D. G., B.SC., D.D.S.(DAL.), M.SC.D.(TOR.), F.R.C.D.(C)
Professor of Orthodontics and Chairman of the Department

ASSOCIATE PROFESSORS

Berry, Doris F. J., M.A.
Associate Professor of Preventive Dentistry
Bigelow, J. A., D.D.S.
Associate Professor of Dentistry
Burgess, R. C., M.SC., D.D.S.
Associate Professor of Dentistry
Fisk, R. O., D.D.S.(TOR.), M.SC.(MICH.), F.R.C.D.(C)
Associate Professor of Orthodontics
Goldner, M., B.A., M.SC., PH.D.
Associate Professor of Dentistry
Halderson, H., D.D.S.
Associate Professor of Orthodontics
Hare, G. C., D.D.S., F.R.C.D.(C)
Associate Professor of Operative Dentistry (Endodontics)
Hord, A. B., D.D.S., B.SC.D.
Associate Professor of Dentistry
Lewis, D. W., D.D.S., D.D.P.H., M.SC.D.
Chairman, Department of Dental Public Health
MacDonald, D. H. J., D.D.S., DIP. ORAL SURG.
Associate Professor of Oral Surgery
McAdam, D. B., D.D.S.
Associate Professor of Restorative Dentistry
Popovich, F., D.D.S., M.SC.D., F.R.C.D.(C)
Associate Professor of Orthodontics
Posen, A. L., D.D.S., M.S.(ILL.), F.R.C.D.(C)
Associate Professor of Orthodontics
Purdy, C. E., D.D.S.
Associate Professor of Dentistry
Purves, J. D., D.D.S.
Associate Professor of Operative Dentistry
Speck, J. E., D.D.S., DIP. PERIODONT, F.R.C.D.(C)
Associate Professor of Periodontics
Storey, A. T., D.D.S., M.S.(MICH.), PH.D.(MICH.)
Associate Professor of Dentistry, Assistant Professor of Physiology (Medicine)
Taichman, N. S., D.D.S., DIP. PERIODONT., PH.D.
Associate Professor of Dentistry, Assistant Professor of Pathology (Medicine)
Zarb, G. A., B.CH.D.(MALTA), D.D.S.(MICH.), M.S.(MICH.)
Associate Professor of Prosthodontics

Leave of absence 1969–70.

Assistant Professors

Anderson, D. L., D.D.S., M.SC.D., DIP.PERIODONT., F.R.C.D.(C)
Assistant Professor of Periodontology
Dale, J. G., B.A., D.D.S., F.R.C.D.(C)
Assistant Professor of Oral Anatomy
Echlin, R. E., D.D.S.
Assistant Professor of Dentistry
Kellam, F. G., D.D.S.
Assistant Professor of Dentistry
Morgan, G. A., D.D.S.
Assistant Professor of Dental Radiology
Van de Mark, T. B., D.D.S., M.D., F.R.C.D.(C)
Assistant Professor of Oral Surgery

Associates in Dentistry

Adams, G. A. C., D.D.S.
Agate, T. E., D.D.S.
Aho, E. C., D.D.S., F.R.C.D.(C)
Anco, R. S., B.SC. PHM., D.D.S.
Andrachuk, P. P., D.D.S.
Armitage, J. M., D.D.S., DIP. ORAL SURG., F.R.C.D.(C)
Arshawsky, A. I., D.D.S., F.R.C.D.(C)
Badner, M. G., D.D.S., M.SC.D.
Banting, W. A., D.D.S.
Bartalos, R. M., D.D.S.
Bedford, W. R., D.D.S.
Beierl, C. D., D.D.S.
Bielawski, J. I. J., D.D.S.
Bilkey, E. R. W., D.D.S.
Booker, R. E., D.D.S., DIP. ORAL SURG.
Boyes, M. G., D.D.S.
Boyko, R., D.D.S., M.SC.D.
Branscombe, E. S., D.D.S.
Breen, R. E., D.D.S.
Brown, A., D.D.S., DIP. ORAL SURG., F.R.C.D.(C)
Brown, M., D.D.S.
Buder, H. E., D.D.S.
Burns, F. B., D.D.S.
Cernavskis, N., D.M.D.(MÜNS.), D.D.S.(TOR.), M.SC.D.(TOR.)
Chalmers, J. A., D.D.S.
Chalmers, J. C., D.D.S.
Chapple, A. W., D.D.S., DIP. PERIODONT.
Charlebois, M. A., D.D.S.
Chiang, D., D.D.S.
Chong, D. V., D.D.S., M.SC.D.
Clarke, A. J., B.SC.(LOND.), D.D.S.
Cowan, D., D.D.S.
Dale, A., B.A., D.D.S.
Dean, P. W., D.D.S.
Delia, R. F., B.CH.D.(MALTA), D.D.S., DIP. ORTHODONT., M.SC.D.
Direnfeld, V. N., D.D.S., M.S.(ILL.)
Dover, W. R., D.D.S., B.SC.D.
Duncan, J. C., B.D.S.(DUB.), D.D.S., DIP. PAEDODONT., M.SC.D.
Dunlop, R. B., D.D.S.
Ellis, R. L., D.D.S., D.D.P.H.
Feldman, A., D.D.S., DIP. ORTHODONT., M.SC.D., F.R.C.D.(C)
Ferguson, H. A., D.D.S.
Ferguson, J. A., D.D.S.
Finlayson, R. H., D.D.S.
Fleming, W., D.D.S., DIP. PERIODONT., F.R.C.D.(C)
Fleming, W. A. E., D.D.S.
Freedman, H. L., D.D.S., DIP. PERIODONT.
Frost, L. J., D.D.S., M.D.(DAL.)
Gaik, L., D.D.S.
Gajda, J. Z., D.D.S., DIP. ORAL SURG., F.R.C.D.(C)
Gilbert, V. P., D.D.S.(MCG), DIP. ORTHODONT.
Golden, R., D.D.S

Golden, S., D.D.S., F.R.C.D.(C)
Green, R. O., D.D.S.
Grose, R., D.D.S.
Hamilton, R. M., D.D.S., DIP. ORTHODONT.
Hancock, G. L., D.D.S.
Hanna, J. M., D.D.S.
Hare, G. E., D.D.S.
Hemrend, B., D.D.S., M.SC.D.
Hicks, J. K., D.D.S., DIP. PERIODONT.
Histrop, A. E., D.D.S.
Hooks, E. B., D.D.S.
Hudgins, W. B., D.D.S.
Hugill, R. A., D.D.S., B.SC.D.
Jack, R. N., D.D.S., DIP. PERIODONT., F.R.C.D.(C)
James, G. A., B.D.S.(GLAS.), DIP. ORTHODONT.(R.C.S.), F.D.S., R.C.S., M.D.S.(GLAS.)
Kamienski, M. A., D.D.S.
Kaye, C. E., D.D.S.(MCG.)
Keen, M. M., B.D.S.(LOND.)
Kerr, J. K., D.D.S.
Kidd, H. R., D.D.S.
Kowalchuk, P. W., D.D.S.
Krueger, V. D., D.D.S.
Krupanszky, J., D.M.D.(ERLANGEN), D.D.S.(TOR.)
Lackie, F. C., D.D.S., DIP. PERIODONT., F.R.C.D.(C)
Landsberg, R. L., D.D.S., M.SC.D., F.R.C.D.(C)
Langenholt, E., D.D.S.
Langmaid, J. A., D.D.S., F.R.C.D.(C)
Levin, H. J., D.D.S.
Levine, N., D.D.S., DIP. PAEDODONT., M.SC.D., F.R.C.D.(C)
Lie, G., D.D.S., DIP. ORTHODONT.
Linghorne, J. G., D.D.S., DIP. PERIODONT., F.R.C.D.(C)
Maclaren, Mrs. C. M., B.SC.
Marshall, G. M., D.D.S.
McColeman, W. J., D.D.S.
MacDonald, H. W., D.D.S.
McDowell, J. F., D.D.S., B.SC.D.
McKee, D. M., D.D.S.
McKegney, R. S., D.D.S.
McMorran, G. L., D.D.S.
McNeice, E. J., D.D.S.
Medwecki, A. W., D.D.S.
Mills, W. H., D.D.S., DIP. PERIODONT.
Moran, R. L., D.D.S., DIP. PAEDODONT.
Moreau, M. E., D.D.S.
Morreale, J. P., D.D.S.
Mullett, J. H., D.D.S.
Munroe, C. S., D.D.S., B.SC.D.
Nattress, J. A., D.D.S.
Newman, S., D.D.S.(DALH.), F.R.C.D.(C)
Nordine, M. C., B.A.(SASK.), D.D.S.
Ovens, V. A., D.D.S.
Paszti, M., D.D.S., M.SC.D.
Peloso, P., D.D.S., DIP. ORTHODONT.
Pepper, H. E., D.D.S.
Pequegnat, J. P., D.D.S.
Perdicaris, J., D.D.S.
Phillips, J. M., D.D.S., B.SC.D.
Pulver, F., D.D.S., M.S.(MICH.), F.R.C.D.(C)
Purves, W. T., D.D.S.
Reynolds, C., D.D.S., M.SC.D.
Richardson, B. A., B.A., D.D.S., DIP. PAEDODONT.
Roberts, M., D.D.S., F.R.C.D.(C)
Rosen, S., D.D.S.
Rowntree, G. T., D.D.S.
Sakarya, M., D.D.M.(ISTAN.), D.D.S.(TOR.)
Saunders, M., D.D.S.
Schacher, V. R., D.D.S.
Scott, G. K., D.D.S.
Scott, P. A., D.D.S.
Sera, M. E., D.D.S., DIP. ORTHODONT.
Sevic, E., D.D.S.
Smith, A. D., D.D.S.
Solomon, A. H., B.D.S.(RAND.)
Sonley, E. G., D.D.S.
Spinks, G. W., D.D.S.
Starr, R. M., D.D.S.
Stewart, J. D., D.D.S.(MCG.)
Sultmanis, G., D.D.S.(MCG.)
Tait, A. J., D.D.S.
Taliano, A. D., D.D.S.
Taub, H., D.D.S.
Teitler, R. V., D.D.S.

Tenute, J. J. P., D.D.S.
Teskey, D. C., D.D.S.
Thompson, G. W., D.D.S., M.SC.D.
Thomson, A. H., D.D.S., F.R.C.D.(C)
Tile, H., D.D.S., DIP. ORTHODONT.
Torneck, C. D., D.D.S.
Turner, J. L., D.D.S.
Twible, B. M., D.D.S.
Verbic, Z. A. S., D.S.(LJUBLJANA), D.D.S.
Vogl, H., D.D.S.
Wainwright, R. J., D.D.S.
Walker, E. S., D.D.S.
Watson, R. M., D.D.S.
Weiler, R., D.D.S.
Weinberg, S., D.D.S., DIP. ORAL SURG., F.R.C.D.(C)
Williams, J. R., D.D.S.
Winnick, A., D.D.S., F.R.C.D.(C)
Woods, W. G., D.D.S., F.R.C.D.(C)

DEMONSTRATORS

Aquilina, P. J., D.D.S.
Baker, G. I., D.D.S., M.S.(ILL.)
Balsara, R. D., L.D.S.(BOMBAY), D.D.S.
Becker, J., D.D.S., M.S.(BOSTON)
Bell, P., D.D.S.
Browes, G. H., D.D.S.
Bulchak, W. B., D.D.S.(MCG.)
Chapnick, P., D.D.S.
Cipparone, E. A., D.D.S.
Culotta. V. J., D.D.S.
Druck, J. S., D.D.S.
Dungy, A. F., D.D.S.
Eckler, G. S., D.D.S.
Fairley, R. C., D.D.S.
Goldman, S. K., D.D.S., DIP. PERIODONT.
Glazer, B., D.D.S.
Gryfe, J. H., D.D.S.
Hisaki, E., D.D.S., DIP. ORTHODONT.
Hinch, J. B., D.D.S.
Ikse, A., D.D.S.
Joe, A., D.D.S., DIP. ORTHODONT.
Kaye, J. G., D.D.S.
Kondracki, M. L., D.D.S.
Kopel, M., D.D.S.
Kuryllowicz, P. W. W., D.D.S.
Lawson, R. C., D.D.S.
Layug, B., D.D.M.(PHIL.), DIP. PAEDODONT.
Lyon, D. F., D.D.S.
Levinson, K. I., D.D.S.
Mecklinger, M. G., D.D.S.
Nicholson, W. J., D.D.S.
O'Brien, D. J., D.D.S.
Ostaff, P. J., D.D.S.
Poss, Mrs. R., DIP. DENT. HYGIENE
Perlmutter, G., D.D.S.
Potashin, H., D.D.S.
Rand, M. R., D.D.S.
Sexton, R. J., D.D.S.
Sinclair, W. J., D.D.S., DIP. ORTHODONT.
Snihura, N. J., B.A.SC., D.D.S.
Sparrow, G. E., D.D.S.
Tucker, S. P., D.D.S.
Zosky, J. G., D.D.S.

LECTURERS

Emery, G., M.D.
Johnson, R., M.D.
Moses, C. H., D.D.S., F.R.C.D.(C)
Palmer, J. A., M.D., F.R.C.S.(C), F.A.C.S.
Pownall, K. F., D.D.S.
Shaw, A. G., M.D., F.R.C.S.(C)
Sturtridge, W. C., D.D.S., M.D.
Way, D. C., D.D.S., M.S.(MICH.), F.R.C.D.(C)
York, J. E., D.A., M.R.C.S., L.R.C.P., F.R.C.P.(C)

Acknowledgement is given to the following Departments within the University that give instruction to Dental students: Anatomy, Biochemistry, Chemistry, Histology, Medicine, Pathology, Pharmacology, Physiology, Surgery.

In 1868 the legislature of the Province of Ontario passed the Act Respecting Dentistry (31 Victoria Cap. 37) incorporating the members of the dental profession in the Province as the Royal College of Dental Surgeons of Ontario with the dual function of teaching and licensing.

The School of Dentistry of the Royal College of Dental Surgeons was established in 1875. In 1888 the College became affiliated with the University of Toronto, which established the degree of Doctor of Dental Surgery. At the University convocation on April 22, 1889, the profession of dentistry was for the first time actively represented among the body of graduates, when twenty-five candidates were admitted to the degree of Doctor of Dental Surgery.

On July 1, 1925, the School of Dentistry became the Faculty of Dentistry of the University of Toronto, the Royal College of Dental Surgeons relinquishing to the University its function as a teaching body and retaining its function as the licensing body for the Province of Ontario.

Until 1906 the examination for the degree of Doctor of Dental Surgery and for the title of Licentiate of Dental Surgery were held separately. From 1906 to 1925 the University and the College conducted joint examinations. Upon the creation of the Faculty of Dentistry in 1925, the College agreed that the University should conduct all examinations, and forward to the College annually a list of those candidates for the Ontario licence who had met the conditions prescribed for the degree of Doctor of Dental Surgery as a preliminary to the issuance of the licence to practise in Ontario, and the examination record of such other candidates as at the request of the Board had been examined by the Faculty.

After its establishment in 1875, the School of Dentistry of the Royal College of Dental Surgeons of Ontario was opened in two rented rooms at 46 Church Street, Toronto, with a staff of two professors and six clinical instructors and demonstrators. In 1878 the School was moved to the southwest corner of Victoria and Richmond Streets, with quarters consisting of four rented rooms. In 1886 it was transferred to 13 Louisa Street, where the two upper floors were rented (four rooms in all), and by 1893 the entire building, consisting of six rooms and basement, was taken over. Early in 1895 it was decided that the School should have a building of its own. Accordingly a four-storey building at 93 College Street was erected, and was officially opened on October 1, 1896. Within six years these premises were found inadequate and were enlarged in 1902. The School remained in this building until 1909 when, to permit the erection of the Toronto General Hospital, it was moved to a corner situation at 230 College Street (which at that time was numbered 240), and in 1920 the building was enlarged by the addition of the east wing. The Dental Building, as it then stood, was 134′ × 96′, and covered six floors.

The course in Dental Nursing, instituted for the purpose of training young women to qualify as assistants to dental practitioners, was established by the Royal College of Dental Surgeons in 1919. Upon the creation of the Faculty of Dentistry in 1925, this course of instruction was also taken over by it, although the College continued to award the diplomas. In 1936 the University established

the diploma in Dental Nursing, and the College then discontinued its diploma.

The plan of arranging for extramural lectures to Dental graduates was initiated by the Royal College of Dental Surgeons of Ontario in the winter of 1920–21 and has been in operation ever since. With the establishment of the Faculty of Dentistry the lectures became a co-operative effort of the College and Faculty.

On June 5, 1914, the degree of Doctor of Laws *honoris causa* was conferred upon James Branston Willmott, Dean of the School of Dentistry of the Royal College of Dental Surgeons of Ontario. Upon the occasion of the joint convention of the British Dental Association, the Canadian Dental Association, and the Ontario Dental Association, in Toronto, at a special convocation called for the purpose on August 11, 1932, the degree of Doctor of Laws *honoris causa* was conferred upon the president of the British Dental Association, George Northcroft, O.B.E., L.D.S., R.C.S. (Eng.), upon Charles Nelson Johnson, M.A., D.D.S., Professor of Operative Dentistry, Chicago College of Dentistry, and upon Albert Edward Webster, D.D.S., M.D., Dean of the School of Dentistry, Royal College of Dental Surgeons of Ontario, 1915 to 1923. On June 7, 1945, the degree of Doctor of Laws *honoris causa* was conferred upon Ashley Woodward Lindsay, D.D.S., M.Sc. (Dent.), Dean of the Faculty of Dentistry of West China Union University.

The degree of Master of Science in Dentistry was established on April 8, 1927, that of Bachelor of Science in Dentistry on June 8, 1927, the diploma in Dental Public Health on April 14, 1944, the diplomas in Dental Oral Surgery and Anaesthesia, Orthodontics, and Periodontics on December 14, 1945, and the diploma in Pedodontics on June 22, 1949.

In 1941, and again in 1942, at the request of the Department of National Defence, a six months' course was given to dental technicians in the Canadian Dental Corps.

Aptitude tests for First Year applicants were instituted in 1942; and in 1944 they were made to include also applicants for advanced standing in the Second Year. Later it was decided to exempt from these tests students entering with advanced standing.

With session 1943–44, to meet the need for dental officers in the Canadian Dental Corps, and at the request of the Department of National Defence, an accelerated course was introduced into all classes except the First Year. Under this programme the summer vacation period was reduced to six weeks, thus permitting the work of the Second to Fifth Years to be completed within three calendar years.

In session 1945–46 a special matriculation for active service personnel was adopted, as outlined in the calendar for session 1946–47.

In session 1945–46 a Combined First-Second Year was formed of Canadian Dental Corps ex-servicemen who had been graded as either Group A or Group B dental technicians in the Army. This class was excused from the following First (Predental) Year subjects: drawing, dental technology, dental bibliography, English, first aid, hygiene, preventive dentistry; and from the following Second (First Dental) Year subjects: organic chemistry, dental

technology, dental metallurgy, mineralogy, English, operative dentistry, preventive dentistry and prosthodontia. Of these Second (First Dental) Year subjects, the organic chemistry, dental technology, dental metallurgy, operative dentistry, and a part of prosthodontia were required to be taken in the Second Dental Year of session 1946–47. A second (and final) similar Combined Predental-First Dental Year was formed in session 1946–47, under the same conditions.

With session 1946–47 the nomenclature of the classes was changed as follows: First Year became Predental Year; Second Year became First Dental Year; Third Year, Second Dental Year; Fourth Year, Third Dental Year; and Fifth Year became Fourth Dental Year.

With session 1947–48 the Predental year was recognized by the Faculty of Arts as applying towards the degree of Bachelor of Arts.

In July 1948 the last of the wartime accelerated course classes graduated.

On April 10, 1950, Tau Tau Chapter of Omicron Kappa Upsilon Honor Fraternity was established in the Faculty.

In session 1951–52 the Diploma in Dental Hygiene was established.

In session 1952–53 the Diploma in Dental Nursing was replaced by the Certificate in Dental Nursing.

In session 1955–56 the Predental year became the Preprofessional year.

In session 1956–57 the requirement for admission to the course in Dental Nursing was changed from Ontario Grade XII to 9 papers of Grade XIII.

The Cornerstone of the new dental building at 124 Edward Street was laid by The Honourable L. M. Frost, Q.C., LL.D., D.C.L., Premier of Ontario, on July 29, 1958.

The New Building for the Faculty of Dentistry of the University of Toronto was formally opened on November 25, 1959, by Premier Frost. On this occasion, at a Special Convocation, the University conferred the degree of Doctor of Laws *honoris causa* upon Willard Corwin Fleming, D.D.S., D.Sc., Dean of the Faculty of Dentistry, University of California; upon Arnold Denbow Alfred Mason, D.D.S., Dean Emeritus, Faculty of Dentistry, University of Toronto; and upon Martin Amsler Rushton, M.A., B.Ch., M.D., F.D.R.C.S., Odont. D., Professor of Dental Medicine, University of London.

In 1960 the Dental Nursing course was discontinued, and after 1962–63 the Preprofessional Year was no longer offered at the Faculty.

In 1969 the Dental Hygiene course was opened to male applicants.

DEVELOPMENT OF DENTAL EDUCATION IN ONTARIO

1868—The Act Respecting Dentistry (31 Victoria Cap 37) passed.

All persons being British subjects by birth or naturalization, who had been constantly engaged for five years and upwards next preceding the passing of the Act in established office practice of the Profession of Dentistry in the Province of Ontario, were granted the title of Licentiate of Dental Surgery.

All persons being British subjects by birth or naturalization, who were engaged at the time of passing of this Act, in the Profession of Dentistry, or who, not having been residents in Ontario, had three years' experience in the practice of Dentistry, were required to pass the prescribed examinations.

The Board of Directors of the Royal College of Dental Surgeons of Ontario was constituted the Provincial Board of Dental Examiners for Ontario.

1869—Any person commencing the study of Dentistry after the passing of the Act was required to attend one session at a Dental College. Two years' indentureship.

1872—Matriculation examination held by members of the Board at Kingston, Toronto, and Hamilton in Orthography, English History and Composition, English Grammar, Geography and Arithmetic.

1875—Three years' indentureship.

The School of Dentistry of the R.C.D.S. opened it first session in November.

1876—Two years at the School of Dentistry of the R.C.D.S.

Two years' indentureship.

1878—High School Entrance certificate for matriculation.

1880—High School Intermediate certificate for matriculation.

1882—Two and one-half years' indentureship.

1888—Non-professional Third Class certificate for matriculation.

Three years' indentureship.

Royal College of Dental Surgeons affiliated with University of Toronto, and Degree of Doctor of Dental Surgery established.

1892—Three sessions at the School of Dentistry of the Royal College of Dental Surgeons.

Three and one-half years' indentureship.

1896—Arts matriculation. Department Junior Matriculation or Second Class Teachers' Certificate including Latin required for the R.C.D.S. matriculation.

1903—Four sessions at the School of Dentistry of the Royal College of Dental Surgeons.

1908—Compulsory indentureship abolished, except between third and fourth years.

1912—Compulsory indentureship entirely abolished.

1914 to 1918—The First Great War.

1917—*Special Sergeants' Course* (February) for the purpose of training sergeants for the Canadian Army Dental Corps.
Sergeant's Matriculation: Second Class Teachers' Certificate, or eight papers, Junior Matriculation.
Regular Session: Required that all subjects of R.C.D.S. matriculation be completed before enrolment.
Enlisted Candidates admitted on Second Class Teachers' Certificate, or eight papers, Junior Matriculation.

1919—Five-year course established. Three hundred and twenty, mostly war veterans, enrolled in four-year course; other applicants, including partial matriculants, registered in five-year course.
Twelve months or more of satisfactory service in the Canadian Army Dental Corps entitled candidates to cover subjects of four-year course in three sessions.
Course in Dental Nursing, one year, established.

1920—War veterans and candidates with standing higher than Junior Matriculation admitted to four-year course.

1921—War veterans who had served one year or more on an active front admitted to four-year courses. Five-year course compulsory for all other candidates.
Summer Session (six weeks) or Indentureship (three months) compulsory between Junior and Senior years.

1922—One year in Arts at a Provincial University accepted for admission to the Second Year of the five-year course.
Special concessions to returned soldiers discontinued.

1923—Matriculation: Pass Matriculation (Middle School) in subjects of English, History, Mathematics, Latin, Experimental Science (Physics and Chemistry), and one of Greek, German, French, Italian or Spanish (preferably French).

1925—The School of Dentistry became the Faculty of Dentistry of the University of Toronto.

1927—Honour Matriculation (equivalent to one year in Arts) in addition to Pass Matriculation required for entrance.
Two years in Arts at a Provincial University accepted for admission to the Second Year of the five-year course if English, Physics, Chemistry, and Biology were included in Arts Course.
Degrees of Bachelor of Science in Dentistry and Master of Science in Dentistry established.

1939—1945—The Second Great War.

1942—Aptitude tests instituted for all applying for registration in the First Year.

1944—Aptitude tests instituted for all applying for admission with advanced standing in the Second Year.
Diploma in Dental Public Health established.

1945—Special matriculation for active service personnel introduced. (For particulars see 1946–47 calendar.)

1946—Diplomas in Dental Oral Surgery and Anaesthesia, Orthodontics and Periodontics established.

1947—Predental Year recognized by Faculty of Arts for B.A. degree.
1949—Diploma in Pedodontics established.
1951—Diploma in Dental Hygiene established.
1952—Certificate in Dental Nursing established and Diploma in Dental Nursing discontinued.
1954—The abbreviations B.Sc.(Dent.) and M.Sc.(Dent.) changed to B.Sc.D. and M.Sc.D. respectively.
1956—Admission to course in Dental Nursing changed to nine papers of Ontario Grade 13.
1960—One-year Dental Nursing Course discontinued.
1963—Preprofessional Year no longer offered at the Faculty of Dentistry.

OFFICERS OF THE FACULTY SINCE ITS ORIGIN

Deans

*James Branston Willmott, D.D.S., L.L.D. 1875–1915
*Albert Edward Webster, D.D.S., M.D., LL.D. 1915–1923
*Wallace Seccombe, D.D.S. 1923–1936
*Arnold Denbow Alfred Mason, D.D.S., LL.D. 1936–1947
Roy Gilmore Ellis, D.D.S., M.Sc.D., F.D.S., R.C.S., LL.D. 1947–1969

Associate Deans

P. G. Anderson, D.D.S. 1968–1970
A. M. Hunt, D.D.S., D.D.P.H., M.Sc.D. 1968–

Assistant Dean

*Thomas Cowling, M.A., D.D.S., B.Paed. 1942–1950

This office was discontinued in 1950

Superintendents

*Walter Earl Willmott, D.D.S. 1899–1912
*Wallace Seccombe, D.D.S. 1912–1923

This office was discontinued in 1923

Secretaries

*Guy G. Hume, D.D.S. 1902–1908
*Walter Earl Willmott, D.D.S. 1908–1925
Colin Constable Rous, B.A.Sc. 1925–1956
Phillip Watson Millard, C.D. 1956–1961
Alan Gordon Read 1961–

Librarians

*Wilber George Luno Spaulding, D.D.S. 1898–1906
*William Ernest Cummer, D.D.S. 1906–1909
*Charles Angus Kennedy, D.D.S. 1909–1912
*Arnold Denbow Alfred Mason, D.D.S., LL.D. 1912–1913
*Charles Angus Kennedy, D.D.S. 1913–1915
*Wallace Seccombe, D.D.S. 1915–1917
*Charles Angus Kennedy, D.D.S. 1917–1937
*Edgar Watson Paul, D.D.S. 1937–1946
Joseph Harker Johnson, D.D.S. 1946–1964

Library Chairman

Jack Gilbert Dale, B.A., D.D.S., F.R.C.D.(C) 1964–

Staff Librarian

Phyllis Margaret Smith, B.A., B.L.S. 1954–

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* Deceased.

DEGREES AND DIPLOMAS IN DENTISTRY

1. The degrees in Dentistry are:
   Doctor of Dental Surgery—D.D.S.
   Bachelor of Science in Dentistry—B.Sc.D.
   Master of Science in Dentistry—M.Sc.D.
   The diplomas in Dentistry are:
   Dental Public Health
   Oral Surgery and Anaesthesia
   Orthodontics
   Periodontics
   Paedodontics

DOCTOR OF DENTAL SURGERY

2. The degree of Doctor of Dental Surgery is the regular degree to which a candidate is admitted upon the completion of the undergraduate course in Dentistry, and it is recognized by dental licensing boards as evidence of graduation, although it does not of itself confer the right to practise Dentistry. (See index for section on Licence for Dental Practice.)

3. The dental course is designed to unify the cultural subjects, fundamental sciences and dental studies, as it is believed that cultural, scientific and professional development cannot be sharply differentiated, but should proceed concurrently throughout the entire dental course.

ADMISSION TO FIRST YEAR

Applications for admission to first year must be in the hands of the Faculty Secretary by March 1. Applications received after that date will not be considered.

4. Registration is offered to approximately 125 students in the First Year on the basis of:

(*a*) academic standing and ability as indicated by the certificates submitted;
(*b*) character and fitness for the course in Dentistry.

5. *Procedure for Application*

Application forms may be obtained from the Secretary, Faculty of Dentistry, 124 Edward Street, Toronto 101. Applications should be completed and forwarded to the Secretary so that they are received by March 1. All certificates then available should be sent with the application; all certificates issued after that date should be forwarded as soon as possible. Applications should not be submitted earlier than October 1.

6. Candidates *must* submit, for *all* universities and colleges attended for *any* period of time, official transcripts of record indicating all courses studied, the grades secured in each (whether passes or failures) and statements of honourable dismissal. Candidates may also be requested to supply a Calendar of

each university attended. The information given should also account for any years not at school.

It is the candidate's responsibility to complete his application by providing all necessary documents punctually. Transcripts and certificates for previous years are due at the time of application; transcripts for the current year must be submitted immediately they become available and no later than June 30. Applications remaining incomplete after that date will be deemed withdrawn.

Applicants for admission should regard holding the published admission requirements as meaning only that they are eligible for selection to the course. Under the University's admission practices, school records and reports and other evidence of the student's ability are taken into account.

7. *Admission Requirements, First Year*

Candidates for admission to the First Year must have obtained clear standing in a university programme at a level beyond Ontario Grade 13. Their studies should include at least one full year of a regular degree programme, and must include the following subjects at a level beyond Grade 13:

Zoology Chemistry Physics

Suitable programmes are offered by most Ontario universities.* The year must be completed by the inclusion of other courses as prescribed by the university attended: usually mathematics is co-required by these sciences, and English is a desirable option if available. Students attending universities where no first-year Zoology is offered may substitute Biology.

It is not necessary to take this preparatory year at the University of Toronto, but students who prefer to do so should enrol in First Year Arts and Science and take the following courses:

Biology	100 *or* 120
Chemistry	120
Physics	120 *or* 130 *or* 135
Mathematics	as co-required by these sciences
One other subject	(English is desirable)

Students at Scarborough College of the University of Toronto will find a somewhat different course structure, and should substitute Biology A1, Chemistry A1, and Physics A1 for the above sciences.

Applicants who have taken their post-secondary education outside Canada are required to hold a Bachelor of Arts or Bachelor of Science or similar university degree.

All candidates are required to take the dental aptitude tests conducted by the Canadian Dental Association (and in the United States by the American Dental Association). Information on the tests will be issued with the Faculty's

*It is not necessary to take this preparatory year at the University of Toronto, but students who prefer to do so should enrol in First Year Arts and Science and take five courses, including the following:

At St. George Campus—Biology 100 *or* 120; Chemistry 120; Physics 120 *or* 130 *or* 140; Mathematics as co-required by these Sciences.

At Scarborough College—Biology A1; Chemistry A1; Physics A1; Mathematics as co-required by these Sciences.

At Erindale College—Biology 100 *or* 120; Chemistry 120; Physics 110; Mathematics as co-required by these Sciences.

application forms or may be obtained direct from the Canadian Dental Association, 234 St. George Street, Toronto 5. Candidates who are not in Canada or the United States should consult the Faculty Secretary.

8. *Ontario Grade 13*

High school students should note that the Faculty of Dentistry does not specify any particular subjects or standing at the Grade 13 level. They should plan their Grade 13 programmes so that they meet the admission requirements of whatever university course they will take in qualifying for admission to the Faculty. Grade 13 Certificates (or equivalent) should, however, be submitted with applications.

To guide students from other provinces, the following certificates or courses are usually considered to be the equivalent of Ontario Grade 13:

Alberta, Manitoba, Nova Scotia, Saskatchewan—Grade 12

British Columbia, New Brunswick—Grade 13 or First Year University

Newfoundland—First Year Memorial University

Prince Edward Island—First Year University course at the University of P.E.I.

Quebec—Senior High School Leaving Certificate; English Catholic Senior High School Leaving Certificate (Fifth Year High—Grade 12); First Year C.E.G.E.P.

9. *Mature Students*

(*a*) Admission Regulations

Candidates of mature age (25 years or older on October 1 of the session to which admission is sought) who have lived in Ontario for a minimum period of one year, and are normally resident in Ontario, may request special consideration if they have not completed in full the published admission requirements. Such applicants must submit a birth certificate at the time of application.

(*b*) Probationary Status

Candidates accepted by the Senate's Committee on Admissions as mature students are admitted on probation. They must obtain standing in their first year of study in order to have their probationary status removed. If they do not obtain standing they will not be allowed to repeat the year or to enroll in any other course in the University of Toronto until they present in full the published admission requirements.

(*c*) It is only in exceptional circumstances that a candidate aged 30 years or more will be admitted to the First Year.

10. *Admission Regulations concerning candidates who have previously failed in University work.*

(*a*) A candidate who, on one occasion has failed to secure the right to advance to a higher year at the University of Toronto or at any other institution of higher learning, may be eligible for selection to the University of Toronto subject to warning of probable required withdrawal from his Faculty and possible debarment from the University on a second failure.

(*b*) A student who on two occasions has failed to secure the right to advance to a higher year at the University of Toronto will normally be refused readmis-

sion to his Faculty and may be debarred from registration in any division of the University of Toronto. Candidates with two such failures at other institutions will normally be refused admission.

11. *English Facility Requirements*

All applicants whose previous education has been in a language other than English are required to submit evidence of facility in English. The following evidence is acceptable:

(*a*) The University of Michigan Language Test. This test is available at the University of Toronto for residents of the Toronto area. Enquiries about writing the test in Toronto should be addressed to the Office of Admissions, Simcoe Hall, University of Toronto.

(*b*) The Certificate of Proficiency in English issued by the Universities of Cambridge or Michigan.

(*c*) The Test of English as a Foreign Language administered by the Educational Testing Service, Princeton, New Jersey.

Information about writing the tests in overseas centres may be obtained from the Office of Admissions, Simcoe Hall, University of Toronto.

The University is prepared to consider other evidence of English Facility which may be submitted for evaluation.

Candidates seeking admission on the basis of certificates which are in a language other than English must submit photostatic copies of their certificates, rather than the original copies. Notarized English translations of the certificates must accompany the photostatic copies. When the certificates do not indicate the subjects studied and the grades secured in the individual subjects in the final year, candidates are required to submit certified statements from authorized officials of the institutions attended, or submit statutory declarations giving the required information.

12. The sum of $50 deposit will be required from each student whose application for admission to the First Year has been accepted. This deposit must be in the hands of the Faculty Secretary within ten days of notification of acceptance. It will be applied to the applicant's fees providing he registers for the First Year or forfeited if he fails to register.

13. Communications relating to entrance requirements and admission are to be addressed to The Secretary, The Faculty of Dentistry, 124 Edward Street, Toronto 2.

ADMISSION TO ADVANCED STANDING*

14. A student of another dental school may be considered for admission to advanced standing in the Faculty of Dentistry on such conditions as Faculty Council may prescribe. Individuals who hold the licence to practise in Ontario, or are qualified to receive that licence, are not admissible to the undergraduate course.

15. Holders of a Bachelor of Dental Surgery (B.D.S.) from certain Commonwealth Universities may seek admission to the Fourth Year under conditions determined by the Faculty Council.

*These advanced admission regulations are subject to change without notice.

16. Holders of a Licentiate in Dental Surgery (L.D.S.) or B.D.S. from certain Commonwealth Universities may seek admission to the Third Year under conditions determined by the Faculty Council.

17. Applications for admission to the Third and Fourth Years should be in the hands of the Secretary by January 1 of the year in which the applicant wishes to seek admission. Any applications that are received after this date may be considered but no assurance can be given that places will be available for the next ensuing session.

18. Holders of Dental Degrees from European and other non-Commonwealth Dental Schools are required to write Qualifying Examinations satisfactory to the Faculty. Providing satisfactory standing is obtained and the applicant's credentials are in order, the student will be considered for admission to the Second Year. Further information can be obtained by writing to the Faculty Secretary. Applications are due by March 1 each year.

REGISTRATION

19. Detailed instructions concerning Registration and Health Requirements will be mailed to returning and newly admitted students before the beginning of each academic year.

20. On Registration Day, before receiving an Admit-to-Lecture Card, each student must register in person with the Secretary of the Faculty in the Dental Building. When registering he must present a receipt or receipts from the Chief Accountant of the University showing payment of at least the first instalment of fees, including the instruments specified for his class. A student being admitted to the course should also present his Letter of Admission.

21. A student who fails to register at the prescribed time will be required to pay to the Chief Accountant a Late Registration fee of $10 plus $1 for each day of delay, to a maximum of $20. Faculty Council may at its discretion refuse a student permission to register late.

22. Students who have been in attendance in this Faculty and have passed all the examinations are expected to register in person the following session without preliminary application, unless they notify the Faculty to the contrary.

TRANSFERS AND WITHDRAWALS

23. A student who wishes to withdraw or to change his course or Division in the University should consult the Faculty Secretary.

PHYSICAL EDUCATION

24. The University's requirements for completion of a Physical Education programme do not apply to students in the Dental course.

REGULATIONS

Discipline

25. The following is a partial summary of the regulations of the Caput concerning student discipline.

(*a*) Subject to the general regulations of the Caput of the University regarding jurisdiction in matters of discipline the Council of University College, the governing bodies of the Federated Universities and Affiliated Colleges, and the Councils of the Faculties, Schools, and Institutes have disciplinary jurisdiction over the conduct of all students registered in these Divisions of the University in all matters of local or internal concern to these Divisions. Jurisdiction over the conduct of students while in residence regardless of the Division of the University in which they are registered is vested in the body administering the residence.

(*b*) Jurisdiction concerning conduct likely to affect the interests of the University as a whole is vested in the Caput.

(*c*) The Students' Administrative Council will be supported in the proper performance of all its obligations and duties as provided in its Constitution.

(*d*) Where the appropriate body exercising disciplinary jurisdiction has found that a student of the University has engaged in conduct prejudicial to the interests of the University, the Caput may, in its discretion, suspend or expel such student from the academic privileges of the University. Every decision of the Caput involving the expulsion of a student from the University requires confirmation of the Board of Governors.

(*e*) Any student who interferes with the personal liberty of another or who subjects another student to indignity or personal violence may be considered by the Caput or any other body exercising disciplinary jurisdiction in the University to have committed a breach of discipline.

(*f*) Initiation ceremonies involving physical violence, personal indignity, interference with personal liberty, or destruction of property, may be deemed a breach of discipline by the Caput or any other body exercising disciplinary jurisdiction in the University.

(*g*) Without limiting the disciplinary powers vested in the respective bodies exercising disciplinary jurisdiction as set forth in section a–f, the following are cited as illustrations of conduct which, in the past, has been considered a breach of discipline prejudicial to the interests of the University:

(i) The organising of a parade on the streets of the city or the taking part in such a parade without permission of the authorities.

(ii) The destruction or defacing of University property, raids on Residences or other University buildings, and the breaking into University buildings.

(iii) Rowdy and other forms of behaviour, either on or off the Campus, of such an objectionable nature as to bring the University into public disrepute.

(*h*) The name of the University is not to be used in connection with a publication of any kind without permission of the Caput.

Unsatisfactory Work

26. *Regulations of the University concerning penalties for unsatisfactory work by students*

(*a*) In cases of unsatisfactory work of a very serious nature, Faculty Council may recommend to the Senate Committee on Admissions that a student shall be debarred from the University.

(*b*) Faculty Council will, except in very exceptional circumstances, refuse to re-admit to this Faculty any student who on two occasions fails to secure the right to advance to a higher year in this Faculty or a like faculty.

(*c*) Faculty Council may for unsatisfactory work suspend a student from regular attendance in this Faculty for a given period of time not exceeding two years and/or until the satisfaction of other conditions as it may see fit. Upon satisfying the conditions of the suspension the student shall be entitled to re-enrolment in this Faculty.

(*d*) Any student who withdraws after February 15, or who does not withdraw but does not write the annual examinations, will be regarded for the purposes of these regulations as having failed his year.

27. *Definition of Terms*

The following terms have been approved by the Senate for all faculties in calendars, correspondence and records:

(i) *"Debar", "Debarred", "Debarment".* This term is restricted to a student who by decision of the Senate's Committee on Admissions is debarred from registration in any faculty of the University.

(ii) *Refused readmission to the faculty.* This term is applied to a student whom the relevant Faculty Council has decided is to be refused permission to register again in that faculty (i.e. the student is required to withdraw from the faculty and he may not re-enroll).

(iii) *Suspended from regular attendance in a faculty.* This term is applied to a student whom Faculty Council has decided will not be permitted to continue in his course in this Faculty unless and until he has fulfilled certain specified conditions. The decision of suspension will always include the conditions whether of a lapse of a stated period of time or the completion of specified work, or both, or other conditions, which if satisfactorily met will entitle the student to re-enrolment or re-admission.

HEALTH

28. The University requires that each student in his or her first year at the University take a Medical Examination given by the University Health Service.

Every person admitted to the University as an undergraduate must, at the time of his or her first medical examination by the University Health Service, present satisfactory evidence of successful vaccination within three years prior to the date of the examination, or must be vaccinated by the examining physician.

Participation in laboratory testing

29. At various stages of the teaching programme there are occasions when biochemical, physiological or pharmacological observations are made by students on themselves or on fellow-students. These exercises include some diagnostic or immunization procedures in common use. Unless some valid reason exists, students are expected to participate in such exercises.

30. If any investigative work involving student participation does not form part of the teaching programme, participation is entirely voluntary.

Attendance

31. Students are required to attend lectures, clinics and laboratories except in cases of unavoidable absence.

32. A student whose attendance at lectures or laboratories, or whose work, is deemed by the Council of the Faculty to be unsatisfactory, may have his registration cancelled at any time by the Council of the Faculty, or may be barred from examinations.

33. Third and Fourth Year students must not permit their appointments with patients to conflict with lectures, laboratory classes, or demonstration clinics.

Technique Work

34. All technique work must be done in the Faculty laboratories under the direction of the staff and in accordance with the regulations laid down by the departments concerned.

Examinations

35. Students in the Faculty of Dentistry are required to remove all conditions in a lower year before proceeding to a higher year.

36. Students in their first year of attendance in the Faculty do not have the right to repeat the year, or to repeat a preclinical or clinical course.

37. A student must obtain standing in the subjects of the course and at the times set by Council.

38. In any course in which the department concerned recommends that there be no final examination, the Department may require students who have not obtained a satisfactory standing in their term work (including tests), to pass a special examination.

39. *First and Second Dental Years.*

To obtain standing at the annual examinations a student must secure at least

(*a*) 50% of the marks assigned to each subject, and

(*b*) 57% of the aggregate of the marks assigned to the *preclinical** subjects of the year, and

*Refer to First and Second year curricula on page 54 for identification of "preclinical" courses.

(*c*) 57% of the aggregate of the marks assigned to the *other* subjects of the year.

Students who satisfy requirements (*b*) and (*c*) but not (*a*) may at the next examination session write supplemental examinations on the individual written papers in which the required 50% has not been obtained, but not more than one supplemental may be written on any one paper. If the failure lies in a preclinical* course the student may be required, at the discretion of Council, either to repeat the work of the entire year, including all examinations, or to repeat the work of that preclinical course when such instruction is available. In the latter case, such tests or examinations shall be taken as may be prescribed. See also section 36.

Students who fail to satisfy requirement (*b*) may repeat all the preclinical* subjects of the year in the next academic session (see also section 36). If successful in passing each subject and in securing the necessary 57% average, standing will be granted; otherwise the year is deemed to have been lost, and to continue in the course it will be necessary to repeat the entire work of the year including all examinations.

Students who fail to satisfy requirement (*c*) may write supplementals in all these subjects at the next examination session. If successful in passing each subject, and in securing the necessary 57% average, standing will be granted; otherwise the year is deemed to have been lost, and to continue in the course it will be necessary to repeat the work of the entire year including all examinations. See also section 36.

Students who fail to satisfy requirement (*b*) and also fail to satisfy requirement (*c*) may continue in the course only with the express permission of Faculty Council, for which a petition is required.

40. *Third and Fourth Dental Years*

To obtain standing at the annual examinations a student must secure at least:

(*a*) 50% of the marks assigned to each subject, and

(*b*) 57% of the aggregate of the marks assigned to all the subjects of the year (excluding the Fourth Year essay).

Students who satisfy requirement (*b*) may at the next examination session write supplemental examinations on the individual written papers in which the required 50% has not been obtained, but not more than one supplemental may be written on any one paper or subject. As a concession to Fourth Year students, those required to write only one supplemental may do so in the Spring; all others must wait until the regular examination session which is usually held in August. If the failure lies in a clinical course the student may be required, at the discretion of Council, either to repeat the work of the entire year — including all examinations — or to repeat the work of that clinical course when such instruction is available. In the latter case such tests or examinations shall be taken as may be prescribed. See also section 36.

Students who fail to satisfy requirement (*b*) may write supplementals in all

the written papers of the year at the next examination session. If successful in passing each subject and in raising their overall average to the required 57%, standing will be granted; otherwise the year is deemed to have been lost, and to continue in the course it will be necessary to repeat the work of the entire year, including all examinations. See also section 36.

41. Students required to write supplemental examinations must present themselves at the examination session next ensuing, unless Council has granted prior permission for alternative arrangements.

42. Term examination may be held in any subject and at any time at the discretion of the instructor or by order of Council, and the results of such examinations may be incorporated with those of the annual examinations.

43. Without petition, answer papers will be re-read in each subject in which a candidate obtains less than 50%, and no appeal will be considered for further re-reading of such papers. **In no case will marks be reported to the candidate.**

44. Petitions for consideration with regard to the annual or supplemental examinations on account of sickness, domestic affliction, or other causes, must be filed with the Secretary of the Faculty on or before the last day of the examinations together with a doctor's certificate stating that the candidate was examined at the time of the illness or other evidence.

45. Aegrotat standing in any year but the final year is seldom granted at the annual examinations. Instead, students may be permitted to write at the time of the Supplemental examinations if the facts submitted warrant such consideration.

46. A statement will be sent to each student who attends throughout the year and writes all examinations, showing the grade obtained in each subject, the overall average, and also the ranking in the class. To be assigned a ranking in the Fourth Year, a student must have been in attendance at the Faculty for at least two full sessions.

47. Grade in each subject will be indicated as follows:

A. 75–100%	C. 50–65
B. 66–74	D. Below 50

Average grade will be indicated as follows:

A. 75–100%	C. 57–65
B. 66–74	F. Below 57

48. Candidates who obtain an average of not less than 75% in all the subjects of the year, and not less than 50% on any one subject, will be considered to have passed with honours.

49. No candidate will be admitted to the annual or supplemental examinations unless all fees have been paid.

50. A candidate in a course involving practical work in laboratory or clinic may be denied admittance to the annual or supplemental examinations if the professor under whom the work is carried on reports in writing to the Secretary that satisfactory laboratory or clinical work has not been done, or there has been a signal failure in the practical examinations.

51. The clinical department may in certain special cases report the work of

a student as *incomplete*, in which case a specified further period shall be spent in the Clinic, after which it shall be necessary to pass such examinations as may be given by that department.

52. The supplemental examinations are held during August. A candidate for these examinations is required to send the completed application form, accompanied by the appropriate fee, to reach the Chief Accountant no later than July 11. Council reserves the right to reject applications of, or impose penalties upon, those failing to comply with these requirements.

53. No supplemental courses will be held in laboratory or clinical work.

54. Supplemental examinations are generally written at the Faculty of Dentistry. As a convenience to students living at a distance from Toronto the Faculty will, upon written request, endeavour to arrange for examinations to be written at a nearer university. Students wishing to take advantage of this must undertake to defray the extra expense involved and, to allow time for the arrangements to be made, must present their written request to the Faculty Secretary by June 30.

55. As students are not permitted to register until all conditions are removed, it is recommended that students who write these examinations at points outside Toronto maintain contact with their home addresses until they receive notice of the removal of their conditions.

Exemptions

56. Students may petition for exemption from any subject in which they have successfully completed a course elsewhere, although no student may be granted exemption from more than one subject in any year. Students granted exemption will at the end of the year be given a class ranking and average based on the subjects actually taken, and the 57% requirement and supplemental regulations (see section 39 *et seq.*) will apply on the subjects actually taken. They will not be eligible to receive any prize or scholarship in the year of the exemption. Petitions must be submitted to the Faculty Secretary, in writing, no later than three weeks after the opening of the Fall term.

Appeals

57. A student has the right of appeal to the Senate from any decision of the Faculty Council.

58. A student wishing to appeal to the Senate against a decision of Faculty Council should consult the Secretary of the Faculty, the registrar of his college, or the office of the university registrar about the preparation and submission of his petition to the Secretary of the Senate.

Private Practice Prohibited

59. No student shall, while in attendance at the Faculty of Dentistry, engage in practice for personal pecuniary benefit, either in the Clinic or elsewhere; nor shall he at any time perform any dental operations elsewhere than in the Clinic. Violation of this section will render the offender liable to immediate suspension from all the privileges of a student of Dentistry.

Articles Lost and Found

60. Students are required to report promptly at the Secretary's office, the loss or finding of any articles in or about the Faculty buildings or grounds. The Faculty will not accept any responsibility whatever for books, instruments, equipment or clothing lost or removed from the Faculty premises. Students should take advantage of the locker facilities available throughout the Dental Building.

Transcripts of Record

61. Upon request, and payment of the required fee, transcripts of scholastic records will be forwarded to universities or other institutions of learning.

FEES

First Year

	Men	Women
Academic Fee	$640.00	$640.00
Incidental Fee	70.00	45.00
Instrument Fee	353.00	353.00
Total Fee	1,063.00	1,038.00
or, if paid by instalments,		
First Instalment	743.00	718.00
Second Instalment	323.00	323.00

Second Year

Academic Fee	$640.00	$640.00
Incidental Fee	70.00	45.00
Instrument Fee	261.00	261.00
Total Fee	971.00	946.00
or, if paid by instalments,		
First Instalment	651.00	626.00
Second Instalment	323.00	323.00

Third Year

Academic Fee	$640.00	$640.00
Incidental Fee	70.00	45.00
Instrument Fee	111.00	111.00
Total Fee	821.00	796.00
or, if paid by instalments,		
First Instalment	501.00	476.00
Second Instalment	323.00	323.00

Fourth Year

Academic Fee	$640.00	$640.00
Incidental Fee	70.00	45.00
Instrument Fee	81.50	81.50
Total Fee	791.50	766.50
or, if paid by instalments,		
First Instalment	471.50	446.50
Second Instalment	323.00	323.00

Notes

(*a*) The Fees quoted above are for guidance only, as the final figures for the session are not available at the time of going to press. The Fees Form for 1970–71, issued by the Chief Accountant of the University gives the correct fees.

(*b*) The Academic Fee includes the following fees: Tuition; Library and Laboratory Supply; Physical Education; one Annual Examination; Degree; and Laboratory Fee.

(*c*) The Incidental Fee includes the following fees: Students' Administrative Council; Athletic; Health Service; Dental Students' Society; and, for men, Hart House.

(*d*) The Instrument Fee includes the purchase or rental of instruments, equipment and materials; gowns; and compulsory Bulletins and Stationery Supplies.

62. A student enrolling in the Dental Course is required to pay either the Total Fee for the session, or at least the First Instalment, on or before the opening date of the Academic Year. He cannot receive an Admit to Lectures card from the Secretary of the Faculty until he shows proof that he has done so.

63. A student who has not paid his total fee at the opening of the Session is required to pay the Second Instalment on or before the opening day of the second term. After January 25 an additional fee of $3 a month will be imposed to a maximum of $10. All fees for the session must have been paid in full before the student can be admitted to the annual or final examinations.

64. In order to avoid delay in registration at the opening of each academic year, it is recommended that fees be forwarded by mail prior to the date of registration, together with the Fees Form which is mailed to each student during the summer. Students should take care to complete all required parts of this form, giving full name, course, year, etc. Cheques should be made payable to the University and sent to the Chief Accountant, University of Toronto.

65. Students wishing to pay their fees in person may do so at the office of the Chief Accountant. Particulars of office hours and location will be sent to each student during the summer.

OTHER UNIVERSITY FEES

66. Each student is required to pay the Chief Accountant at the opening of the session, or as otherwise specified, such of the following fees as may be required of him.

67. Equivalent certificate fee $5

Each student who has been admitted to the First Year upon a certificate or certificates granted outside the Province of Ontario and covering all or any part of the admission requirements must pay this fee.

68. Advanced standing fee $10

Each student who has been admitted to advanced standing from another university or college must pay this fee.

69. Supplemental Examination fee .... $10 for the first paper and $5 for each additional paper.

Each student who applies to write a supplemental examination must pay this fee.

AWARDS

In the following pages are described various scholarships, prizes, bursaries and loan funds available to students in the Faculty of Dentistry. The list is not complete: there are many more sources of financial aid too numerous to include here. Some of them, supported by groups such as local dental societies, are specifically for students in this Faculty. Others, for undergraduates in general, are provided by Foundations, Provincial and municipal authorities, business concerns, service clubs, and many other organizations and individuals.

Scholarships and Prizes are awarded to students of high academic standing and, generally, financial need is not taken into account. In most cases application is not required. Among those not listed here are the Leonard Foundation Scholarships and I.O.D.E. Scholarships.

Bursaries are awarded students who can show a need for financial assistance and have a good academic record, although the standard required is not as high as that needed for a scholarship. Bursaries listed here are, with few exceptions, restricted to dental students. In all cases application is necessary.

Loan funds are available to students who need further financial assistance and are in clear standing. The Amy, Kellogg and Dental Alumni funds are restricted to dental students; the others listed are open to undergraduates in general. Application is required, and usually a formal loan agreement must be signed.

As the value of an endowed award is dependent on the income of a fund, it is possible that the value at time of payment may differ from the amount shown here. In the case of awards not endowed, payment will be dependent on the receipt of the annual amount from the donor.

Awards granted to members of graduating classes, other than awards for graduate study and research, will be paid in one instalment as soon as possible after the granting of the award. Awards in other years will be paid in one instalment on November 20 if of the value of $100 or less; awards of more than $100 will be paid in two equal instalments, the first on November 20 and the second on January 20. At the time of paying fees, students may if they wish have the amount due them credited against their fees.

Scholarships and Prizes

All these awards are based on merit: application is not required

Name of Award	Field	Amount	Donor
Awarded on Admission			
Dental Alumni Admission Scholarship	General	up to $500	Dental Alumni Association
R.C.D.S. Admission Scholarship	General	$600	Royal College of Dental Surgeons of Ontario
Awarded in All Years			
Mosby Book Awards	Varies	Books	The Mosby Publishing Company
Awarded in Varying Years			
Ash Temple Ltd. Scholarship	Varies	$300	The Ash Temple Company, in memory of its first president
Awarded in I and II Years			
James Branston Willmott Scholarships	General	$150	Royal College of Dental Surgeons of Ontario, in memory of J. B. Willmott, D.D.S., LL.D.
Awarded in II Year			
Frank Martin Award	Preclinical Technics	$50	Crown and Bridge Study Club
Second Year Prosthodontics Prize	Prosthodontics	$50	Established by Dr. A. M. Hord, continued by Dr. R. L. Twible
Awarded in III Year			
Association of Women Dentists' Scholarship	General	$200	The Association of Women Dentists
Colgate-Palmolive Scholarship	Essay	$500	Colgate-Palmolive Limited
Dentistry Class of '23 Scholarship	General Proficiency	$150*	The Class of '23
William J. Evon Scholarship	Pharmacology	$100*	Friends of the late W. J. Evon, D.D.S.

*Income from Trust Fund; amount shown is approximate.

Name of Award	Field	Amount	Donor
Awarded in III Year (continued)			
International College of Dentists (Canadian Section) Scholarship	General Proficiency	$100	International College of Dentists (Canadian Section)
Oral Pathology Prize	Oral Pathology	$50	Professor H. A. Hunter
Posen and Furie Key	Prosthodontics	Key	Posen & Furie Dental Laboratories
Awarded in IV Year			
Academy of Dentistry Prize	Paedodontics	$100	The Academy of Dentistry
Alpha Omega Award	General Proficiency	Plaque	The Alpha Omega Fraternity
John A. Bothwell Scholarship	Prosthodontics	$170* biennially	Estate of the late Dr. J. A. Bothwell
Harold Keith Box Medals in Periodontology (Two)	Periodontics	1—Gold 2—Silver	Dr. H. W. de Renzy, in recognition of the late Dr. H. K. Box
C.D.A. War Memorial Scholarships (Two)	Essay	1: $200 2: $100	Canadian Dental Association
Canadian Oral Prophylactic Association Medal	Anaesthesia	Medal	Canadian Oral Prophylactic Association
Canadian Society of Dentistry for Children Award	Paedodontics	Book	Canadian Society of Dentistry for Children
Mary Adele Daly Scholarship	Paedodontics	$200 & Key	The late F. J. A. Daly, D.D.S.
Dental Public Health Essay Prize	Public Health	$50	Anonymous
L. J. Fenech Prize in Endodontics	Endodontics	$100	Dr. L. J. Fenech
Hugh Alexander Hoskin Award	Dental Diagnosis	$125*	Friends of H. A. Hoskin, D.D.S.
William R. Jackson Award	Prosthodontics	$100	Mrs. J. D. McLean
Joseph Harker Johnson Award	Oral Surgery and Anaesthesia	$300*	Former students and colleagues of J. H. Johnson, D.D.S.
S. A. MacGregor Medal	Paedodontics	Medal	Ontario Chapter, Canadian Society of Dentistry for Children
John E. Moser Memorial Prize	Radiology	$50	Radiodontia Study Club

*Income from Trust Fund: amount shown is approximate.

*Income from Trust Fund: amount shown is approximate.

Name of Award	Field	Amount	Donor
Awarded in IV Year (continued)			
Omicron Kappa Upsilon	General	Membership	O.K.U. Honour Dental Society
Oral Anatomy Scholarship	Anatomy	$250	Anonymous
Oral B Scholarship	General	$250	Oral B Company (Canada) Ltd.
Orthodontic Book Award	Orthodontics	Book	Anonymous
Edgar Paul Prize	Oral Surgery	$25	Edgar Paul Commemoration Fund
Pro Liberis Prize	Paedodontics	$50 & Key	Dental Public Health Committee, Ontario Dental Association
Prosthodontics Essay Prize	Prosthodontics	$40*	The late Dr. F. L. Cole
M. Rockman Memorial Prize	Radiology	Book	P. S. Rockman, D.D.S.
Wallace Seccombe Memorial Scholarship	Preventive Dentistry	$100*	Friends of the late Wallace Seccombe, D.D.S.
Wallace Seccombe Prize for General Proficiency	General	$150	"Oral Health", in memory of the late Wallace Seccombe, D.D.S.
W. George Switzer Memorial Award	Prosthodontics	Key	Friends of the late W. George Switzer, D.D.S.
Paul Takahashi Scholarship	Periodontics	$100*	Dr. Paul Takahashi
Albert E. Webster Memorial Scholarship	Operative Dentistry	$100*	Friends of the late Albert E. Webster, M.D., D.D.S., LL.D.

*Income from Trust Fund: amount shown is approximate.

Bursaries

Application is required for all Bursaries

Name of Award	Field	Amount	Donor
Applicable to Any Year			
Atkinson In-Course Bursaries	General	Varies	Atkinson Charitable Foundation
Dental Alumni Bursaries (Two)	General	$200 each	Dental Alumni Association
O.D.A. Bursaries	General	up to $500	Ontario Dental Association
Province of Ontario Student Awards Programme	General	Varies	Dominion and ProvincialGovernments
Applicable to III Year			
T. Howard Graham Bursary	Operative	$100	P. G. Anderson Study Club
Ed. Green Bursary	Operative	$100	Associated Dentists' Co-operative
James G. Perkin Bursary	Prosthodontics	$50	The late James G. Perkin, D.D.S.
Toronto Alpha Omega Memorial Bursary	General	$100	Toronto Alumni Chapter Alpha Omega Fraternity
Applicable to IV Year			
Posen and Furie Bursary	Prosthodontics	$100	Posen & Furie Dental Laboratories

SCHOLARSHIPS AND PRIZES

The Academy of Dentistry Prize

The Academy of Dentistry Prize of the value of $100 is awarded to the student in the graduating class who attains the highest standing in the subject of Clinical Dentistry for Children.

The first award was made in 1944 (under University Senate statute No. 1648).

The Alpha Omega Fraternity Award

The Alpha Omega Fraternity Scholarship Award, the gift of the Alpha Omega Fraternity, is awarded annually to the graduating student who has attained the highest scholastic average in his four years of dental studies in this Faculty. It is in the form of an inscribed plaque.

The first award was made in 1950 (under University Senate statute No. 2029).

The Ash Temple Ltd. Scholarship

The Ash Temple Scholarship of the value of $300 was donated by Ash-Temple Limited to commemorate the first President of the Company.

This Scholarship is awarded annually by the Council of the Faculty of Dentistry to the student who, having completed the year without condition, ranks highest in the subject chosen by the Faculty as the basis for competition in that session.

The subject and class to which the award is to be applicable will be announced by the Faculty on or before the first day of November of the session concerned.

The first award was made in 1947 (under University Senate statute No. 1848). The name was changed to its present form in 1960.

Association of Women Dentists Scholarship

First awarded in session 1967–68, this scholarship is presented annually to the highest-ranking female student who completes the Third Year with Honours standing. The gift of the Association of Women Dentists, its value is $200.

The John A. Bothwell Prosthodontics Scholarship

The estate of the late John A. Bothwell, D.D.S. has provided for the establishment of a scholarship, to be awarded every two years to a member of the graduating class who has attained the greatest proficiency in the subject of Prosthodontics, both academic and clinical, of the Fourth Year. The value of this scholarship is the income from a trust fund, or approximately $170.

The first award was made in 1959 (under University statute No. 2574).

Harold Keith Box Medals in Periodontology

From an endowment given by Dr. Hubert W. deRenzy and established within the Faculty of Dentistry in recognition of the contributions to dentistry made by the late H. K. Box, Ph.D., D.D.S., there are awarded annually two medals, one gold and one silver, to two students of the Final Year who rank first and second respectively in the subject of Periodontology of that year.

The first awards were made in 1944 (under University Senate statute No. 1618).

Canadian Dental Association War Memorial Scholarship

In 1947 the Canadian Dental Association established a scholarship fund as a memorial to those Canadian dentists who paid the supreme sacrifice in World Wars I and II.

Two prizes, respectively of the value of $200 and $100 are awarded annually to undergraduates of the final year of a Canadian faculty of dentistry who have been in attendance for at least two years at Canadian dental schools, upon a 2,500–3,000-word essay. Note that this competition is open to students at all Canadian Dental Schools.

Enquiries concerning the scholarships should be made to the Secretary, Canadian Dental Association, 234 St. George Street, Toronto 5.

Canadian Oral Prophylactic Association Medal

In 1951 the Canadian Oral Prophylactic Association donated the sum of $1000, together with a completed die and gold medal, to recognize interest and accomplishment in dental anaesthesia and to commemorate Dr. Horace Wells, who introduced the clinical use of nitrous oxide.

The Canadian Oral Prophylactic Association Medal will be awarded annually to the student in the final year who has demonstrated the most outstanding accomplishment in local and general anaesthetics as they apply to Dentistry.

The first award was made in 1951 (under University Senate statute No. 2051).

The Canadian Society of Dentistry for Children Award

The Canadian Society of Dentistry for Children has established an award, in the form of a selected textbook, to that student of the Fourth Year who, in the opinion of the Faculty Council, is proficient in the subjects related to dentistry for children. The first award was made in 1959.

The Colgate-Palmolive Scholarship

Through the generosity of Colgate-Palmolive Limited, a scholarship in the amount of $500, to be applied to the fees of the Fourth Year, is to be awarded annually to a member of the Third Year who submits the best essay on a topic to be announced by the Faculty. To be eligible to compete, a

student must have obtained an average of at least 70% on the final examinations of both the First and Second Years. The writing of the essay will conform to the conditions laid down for essays in the Fourth Year. Students will be informed of their eligibility by the Faculty Office.

The first award was made in Session 1958–59 (under University Statute No. 2577).

The Mary Adele Daly Scholarship

The Mary Adele Daly Scholarship, the gift of the late Francis J. A. Daly, D.D.S., in memory of his wife Mary Adele Daly, of the value of $200 and an accompanying key, is awarded annually to the student who ranks highest in the Fourth Year subjects pertaining to dentistry for children, both clinical and theoretical.

The first award was made in 1950 (under University Senate statute No. 2000).

Dental Alumni Association Admission Scholarship

This scholarship, the gift of the Dental Alumni Association, is awarded on admission to First Year. It is restricted to Ontario residents who have attended a Canadian university for at least one year, and to be eligible a candidate must have at least First Class standing in the most recent year of university study and at least Second Class standing in the second preceding academic year. It is not tenable with other admission awards listed in this Calendar. The maximum value is $500, but to obtain an award greater than $250 the candidate must demonstrate need.

Application is not required. Should no candidate be eligible, or should the maximum value not be required by the winner, the unused money may be used to provide a bursary or bursaries to deserving First Year student(s).

The Dental Public Health Essay Prize

The Dental Public Health Essay Prize, the gift of an anonymous donor, is an annual prize with a value of $50 awarded by the Council of the Faculty of Dentistry to that student of the Fourth Year who submits the best essay on a topic in the field of Dental Public Health.

Unless otherwise specified, the general conditions for essays set out in the Faculty Calendar under Essays shall govern.

The first award was made in 1953 (under University Senate statute No. 2195).

Dentistry Class of '23 Scholarship

The Dentistry Class of '23 Scholarship, the gift of the members of that class, is awarded annually to the student of the Third Year who, having attended the First and Second Years in the Faculty, ranks first at the annual

examinations of the Third Year and obtains at least 75% of the total marks. The value of the scholarship is the annual income from the endowment fund, or approximately $150.

In the event that no award is made in any session, two scholarships may be awarded in a subsequent session, one to the student who ranks first, and the other to the student who ranks second at the annual examinations of the Third Year, provided that each obtains at least 75% of the total marks.

The first award was made in 1947 (under University Senate statute No. 1793).

William J. Evon Scholarship

This scholarship was established by friends and colleagues of the late William J. Evon, D.D.S., and was first awarded in 1967–68. It is based on standing in the Third Year subject of Pharmacology, and to be eligible a student must have completed the first three years of the course in this Faculty and have received Honours standing in the Third Year. The value of the scholarship is the annual income from the endowment fund, or about $120.

The L. J. Fenech Prize in Endodontics

This annual prize of the value of $100 was donated in 1947 by Dr. L. J. Fenech. It is awarded annually to the student of the Fourth Year in the Faculty of Dentistry who is adjudged to have submitted the best essay in the subject of Endodontics.

The following are the general conditions of the award. The specific subject of the the essay will be announced by the Faculty not later than the last day of March in each year. Unless otherwise specified, the general conditions for essays set out in the Faculty Calendar under Essays shall govern. If the Faculty Council so decides, no award need be made in any session.

The first award was made in 1948 (under University Senate statute No. 1917).

Hugh Alexander Hoskin Award

The Hugh Alexander Hoskin Award, the gift of friends, was established in the Faculty of Dentistry in 1954.

This award is made annually by the Council of the Faculty of Dentistry, to the student who obtains clear standing in the Fourth Year and ranks highest in the subject of Dental Diagnosis in that year. The value of the award is the annual income from a trust fund, or approximately $125.

No award will be made in any session in which the Council so recommends; in such event two awards may be made in a subsequent year.

The first award was made in 1955 (under University Senate statute No. 2308).

International College of Dentists (Canadian Section) Scholarship

Through the generosity of the International College of Dentists (Canadian Section), an annual scholarship of the value of $100 was established in the Faculty of Dentistry.

This scholarship is awarded by the Council of the Faculty of Dentistry, to a student of the Third Year. The scholarship is awarded on the following bases: (*a*) Academic proficiency; (*b*) Character; and (*c*) Participation in extra-curricular activities.

The first award was made in 1956 (under University Senate statute No. 2353).

William R. Jackson Award

This award is presented annually to a fourth-year student selected on the basis of superior ability in clinical prosthodontics, taking into account the student's interest, attitude and conduct. It was established by Mrs. J. D. McLean in honour of her father, W. R. Jackson, D.D.S., who was a member of the Faculty for twenty-one years.

First presented in session 1968–69, its value is $100. It is not tenable with any other award based on the subject of prosthodontics.

Joseph Harker Johnson Award

This award was established by former students and professional colleagues "in recognition and honour of Joseph Harker Johnson, D.D.S., formerly Professor of Oral Surgery and Anaesthesia, Librarian of the Faculty, Curator of the Museum, distinguished author and outstanding representative of his profession." It is awarded to the Fourth Year student showing the greatest proficiency in theoretical and clinical Oral Surgery and Anaesthesia. Its annual value is the income from the endowment fund, or about $300, and it was first awarded in 1967–68.

S. A. MacGregor Medal

The Ontario Chapter of the Canadian Society of Dentistry for Children each year presents a medal in honour of S. A. MacGregor, D.D.S., former professor of Paedodontics and Chairman of the Department, to the fourth-year student standing highest in clinical paedodontics. The first award was made in session 1969–70.

The Frank Martin Award

The Crown and Bridge Study Club offers an award of $50 to the student in Second Year who achieves the highest mark in the combined Preclinical Techniques courses of that year. Candidates must have completed satisfactorily

the first two years of the course in Dentistry in this Faculty. In the event of a tie, the winner will be selected on the basis of other scholastic work.

The first award was made in session 1963–64.

Mosby Book Awards

Through the generosity of the Mosby Publishing Company, a dental textbook is awarded annually to a member of each of the four dental years on the recommendation of the Council of the Faculty of Dentistry.

The John E. Moser Memorial Prize

The Radiodontic Study Club, as a move to honour the memory of the late Dr. John E. Moser, former head of the Department of Radiodontics, awards annually the sum of $50 to the member of the Fourth Year who obtains the highest standing in the subject of Radiodontics.

The first award was made in 1956 (under University statute No. 2437).

Omicron Kappa Upsilon

Omicron Kappa Upsilon is an honour dental society established to promote scholarship and to honour character among students of dentistry. Tau Tau is the local chapter at the University of Toronto, affiliated with the larger International Dental Society.

The local chapters are made up of four types of membership: Charter members, active or Faculty members, Honorary members and Alumni members.

The Alumni members are those individuals who during their final year at a dental school are selected by the active members and invited to membership in the Society. The selection is made on the basis of the student's scholastic record and character through all his undergraduate years at the dental school as well as his potential for future professional growth and development.

Tau Tau Chapter honours the alumni members chosen during their final year by naming them at the graduation banquet. At the same time, each student so honored will be presented with a certificate of membership in the Society as well as a gold key suitably inscribed.

Oral Anatomy Scholarship

The Oral Anatomy Scholarship was established in 1955 by an anonymous donor.

This annual scholarship of the value of $250 is awarded by the Council of the Faculty of Dentistry, to a student who ranks among the first ten in the subject of Anatomy in the First Year in this Faculty, and who ranks highest in related subjects in the Fourth Year.

The first award was made in 1955 (under University Senate statute No. 2363).

The Oral B Scholarship

Established through the generosity of the Oral B Company (Canada) Limited and valued at $250, this scholarship is awarded to the student who has attended in consecutive sessions all four years in this Faculty, passing each year without condition, and attains the highest scholastic average over the four years with honours in the final year.

The first award was made in session 1964–65.

Oral Pathology Prize

Presented through the generosity of Dr. H. A. Hunter, this prize is awarded to the third year student who, having honours standing in the work of the year, stands highest in the subject of Oral Pathology. The prize was established and first awarded in session 1966–67; its value is $50.

The Orthodontic Book Award

An anonymous donor has generously provided for the annual award of a selected dental textbook to that student of the graduating year, who in the opinion of the Faculty Council, rates first in the subject of Orthodontics, both clinical and theoretical. The first award was made in 1959.

The Edgar Paul Prize

The Edgar Paul Prize, the gift of the Edgar Paul Commemoration Fund, with a value of $25, is awarded annually by the Council of the Faculty of Dentistry based upon the recommendation of the Department of Oral Surgery and Anaesthesia to that student of the final year who has shown the greatest proficiency in Clinical Oral Surgery.

The first award was made in 1952 (under University Senate statute No. 2153).

The Posen and Furie Key

This gold Key, the gift of the Posen and Furie Dental Laboratories, is awarded annually to the student who completes the Third Year without condition and who ranks highest in the subject of Prosthodontics, financial need not being a consideration.

The first award was made in 1952 (under University Senate statute No. 2157).

Pro Liberis Prize

The Pro Liberis Prize, of the value of $50 and the accompanying key, the gift of the Dental Public Health Committee of the Ontario Dental Association, is awarded annually to the student of the Fourth Year who ranks second in the subjects pertaining to dentistry for children, both clinical and theoretical.

The award was first made in 1944 (under University Statute No. 1619) to a member of the Second Dental Year. In 1958, the terms of the award were changed to apply to the Fourth Dental Year.

The Prosthodontics Essay Prize

The Prosthodontics Essay Prize, donated in 1948 by the late F. L. Cole, D.D.S., is awarded to the student of the Fourth Year who submits the best essay on a subject announced by the Faculty in the field of Prosthodontics.

The value of the award is the annual income from a trust fund, or approximately $40.

The first award was made in 1949 (under University Senate statute No. 1923).

Maxwell Rockman Memorial Prize

In honour of the late Maxwell Rockman, D.D.S., former Chairman of the Department of Radiology, a book is given annually by his son, Dr. P. S. Rockman. The award is based on highest standing in fourth-year clinical Radiology, and was first presented in session 1969–70.

Royal College of Dental Surgeons Scholarship

Established in 1962 through the generosity of the Royal College of Dental Surgeons of Ontario, this scholarship is awarded to an Ontario resident on admission to the First Year. The minimum requirements are First Class standing in the most recent year of university study and at least Second Class standing in the second preceding academic year. The value of the award is $600. The scholarship is not tenable with other admission awards listed in this Calendar, and candidates must have attended a Canadian university for at least one year. Application is not required.

The last award will be made in 1970.

Wallace Seccombe Memorial Scholarship

The Wallace Seccombe Memorial Scholarship was established, with funds donated by members of the dental profession, to commemorate the life and work of the late Wallace Seccombe, D.D.S., who was an officer of the School of Dentistry and of the Faculty of Dentistry for many years, and Dean from 1923 until his death in 1936.

The scholarship, of the annual income from the fund (approximately $100), will be awarded to the student who, having completed without condition the Third and Fourth Years in attendance in the Faculty of Dentistry, ranks highest in the subject of Preventive Dentistry in the Fourth Year.

Should no award be made in any year, the amount involved will be added to the capital of the endowment.

The first award was made in 1940 (under University Senate statute No. 1442).

Wallace Seccombe Prize for General Proficiency

The Wallace Seccombe Prize for General Proficiency was donated by *Oral Health* in memory of the late Wallace Seccombe, D.D.S., founder and editor of *Oral Health*.

The prize, of the value of $150, will be awarded to a student who, having completed without condition the Third and Fourth Years in attendance in the Faculty of Dentistry, obtains an average of at least 66% of the total marks assigned to the annual examinations of the Fourth Dental Year. The prize is awarded upon General Proficiency, including academic standing, personality, athletic activities and extra-curricular interests. It need not be awarded in any year in which Council so recommends.

The first award was made in 1939 (under University Senate statute No. 1445).

The Second Dental Year Prosthodontics Prize

This annual prize of the value of $50 was established in 1948 by Dr. A. M. Hord and continued in 1960 by Dr. R. L. Twible. The prize is awarded annually to the student of the Second Year who completes the year without condition and who, in the opinion of the Dept. of Prosthodontics, obtains highest standing in that subject.

The first award was made in 1949 (under University Senate statute No. 1922).

W. George Switzer Memorial Award

The W. George Switzer Memorial Award, the gift of friends, was established in recognition of the services rendered to the University by the late Associate Professor of Dentistry, W. George Switzer, who served on the staff from 1916 until his death in 1938.

The award, in the form of a gold key, will be made to the student who, having completed without condition the Third and Fourth Years in attendance in the Faculty of Dentistry, shows the greatest proficiency in Full Denture and Removable Partial Denture Prosthesis.

This award is tenable with any other prizes, scholarships, or bursaries or other awards in the gift of the Senate.

The first award was made in 1939 (under University Senate statute No. 1441).

The Paul Takahashi Scholarship

As a result of the generosity of Dr. Paul Takahashi, of Toronto, an annual scholarship of the income from a trust fund (approximately $100) is awarded to the student of the graduating class who rates first in the subject of Periodontics and has obtained at least 66% on the annual examinations of the Fourth Dental Year. The first award was made in 1959.

Albert E. Webster Memorial Scholarship

The Albert E. Webster Memorial Scholarship was established, with funds donated by members of the dental profession, in memory of the late Albert E. Webster, M.D., D.D.S., LL.D., a member of the staff from 1893 to 1936, and from 1915 to 1923 Dean of the School of Dentistry.

The scholarship, of the annual income from the fund (approximately $100), will be awarded to the student who, having completed without condition the Third and Fourth Years in attendance in the Faculty of Dentistry, and having obtained at least 66% of the marks assigned to the final written paper in Fourth Year Operative Dentistry, obtains the highest standing in Fourth Year Clinical Operative Dentistry.

Should no award be made in any year, the amount involved will be added to the capital of the endowment.

The first award was made in 1940 (under University Senate statute No. 1443).

James Branston Willmott Scholarships

The James Branston Willmott Scholarships are the gift of the Royal College of Dental Surgeons of Ontario in memory of James Branston Willmott, D.D.S., LL.D., who was Dean of the School of Dentistry of the Royal College of Dental Surgeons from 1875 to 1915.

In its present form the award comprises two scholarships of $150 each, presented to the highest-ranking students in First and Second Years respectively. Honours standing is required. If no award is made in any session, two may be made in a subsequent session.

BURSARIES

Atkinson In-Course Bursaries

The Atkinson In-Course Bursaries, the gift of the Atkinson Charitable Foundation, awarded to students resident in the Province of Ontario who obtain at least Second Class standing at the annual examinations of the previous year, and who demonstrate financial need. Application must be made to the Faculty Secretary before October 15.

Dental Alumni Association Bursaries

Through the generosity of the Dental Alumni, Two Dental Alumni Association Bursaries, each of the value of $200, are offered for award each year to students enrolled in any year of the course in Dentistry upon the basis of need and scholarship. Application should be made to the Secretary of the Faculty.

The first awards were made in 1953 (under University Senate statute No. 2167).

T. Howard Graham Bursary

In 1954, the P. G. Anderson Study Club established, on an annual basis, the T. Howard Graham Bursary of the value of $100.

The bursary is awarded by the Council of the Faculty of Dentistry, to a student of the Third Year who, having completed the First and Second Years in this University and obtained high standing in Operative Dentistry of the Second Year, proves financial need.

Applications must be submitted to the Secretary of the Faculty.

The first award was made in 1954 (under University Senate statute No. 2307).

The Ed. Green Bursary

The Ed. Green Bursary the gift of the Associated Dentists' Co-operative in 1951, is an annual bursary of the sum of $100 awarded by the Council of the Faculty of Dentistry to a third year student who, having obtained an average of at least 66 per cent in the final examinations of the Second Year is in financial need and has demonstrated proficiency in the subject of Operative Dentistry. A candidate for the bursary shall submit an application in writing to the Secretary of the Faculty of Dentistry. No award of the bursary will be made in any session in which the Council of the Faculty of Dentistry so recommends.

The first award was made in 1952 (under University Senate statute No. 2115).

Ontario Dental Association Bursaries

The Ontario Dental Association each year provides $500 for bursaries which are awarded to students in any year of the course whose academic standing is satisfactory and who have demonstrated financial need. The maximum value of any one bursary is $500.

Applications should be made to the Secretary of the Faculty.

James Gestie Perkin Bursary

In 1954, the late James Gestie Perkin, D.D.S established an annual bursary of the value of $50.

The bursary is awarded by the Council of the Faculty of Dentistry, to a student of the Third Year who obtained standing acceptable to the Council in the subject of Prosthodontics of the Second Year, and is in financial need.

No award will be made in any session in which the Council of the Faculty of Dentistry so recommends.

Applications should be made to the Secretary of the Faculty.

The first award was made in 1955 (under University Senate statute No. 2309).

The Posen and Furie Bursary

The Posen and Furie Bursary, the gift of the Posen and Furie Dental Laboratories, is an annual bursary of $100 awarded by the Council of the Faculty of Dentistry to that student who, having obtained an average of at least 66 per cent on the final examinations of the Third Year, has demonstrated outstanding ability in the subject of Prosthodontics and has proved financial need.

The first awards were made in 1962 (under University Senate statute No. 2157).

Toronto Alpha Omega Memorial Bursary

This bursary is given by the Toronto Alumni Chapter of Alpha Omega Fraternity as a memorial to deceased members, and supersedes the earlier Julius J. Levine Memorial Bursary. To be eligible, a student must be registered in Third Year with a satisfactory academic standing and must demonstrate financial need.

The minimum value of the bursary is $100, and the first award will be made in session 1969–70.

LOANS

The Dr. W. B. & Edna May Amy Student Loan Fund

The Amy loan fund was established in 1967, through a generous bequest from the late Edna May Amy, for the assistance of students registered in any course in the Faculty proceeding toward degree or diploma. Applications will be judged on the basis of financial need, and enquiries should be addressed to the Faculty Secretary.

The Associates of the University of Toronto Loan Fund

The Associates of the University of Toronto, Incorporated, offer loans to undergraduate and advanced degree candidates. Funds are limited, and interested students are advised to enquire first at the University's Office of Student Awards, Simcoe Hall.

The loans are free of interest. Repayment must begin within six months after graduation, at a rate of at least 10% of annual income and not less than $500 per annum.

Dental Alumni Association Revolving Loan Fund

In 1957, the University of Toronto Dental Alumni Association established a Loan Fund which was designed to help students in need and who would ordinarily find no other form of assistance available to them. The generosity of the Association has resulted in the Fund being increased substantially each year.

Information concerning assistance from the Fund may be obtained from the Secretary of the Faculty.

The Devonshire Loan Fund

This Fund has been established by Graduates and friends of Devonshire House to assist students in the Residence. Application should be made to the Office of the Dean of Devonshire House.

Kellogg Loan Fund

Because of the very generous gifts received from the W. K. Kellogg Foundation, Battle Creek, Michigan, funds were placed at the disposal of the Faculty of Dentistry for disbursement as loans to undergraduate students in dentistry to aid in defraying tuition fees and the purchase of books, supplies and equipment.

Application should be made to the Secretary of the Faculty.

U. of T. Alumni Loan Fund

This fund comes from subscriptions received originally in 1919 and in succeeding years from graduates of the University and is administered by the U. of T. Alumni Association. Loans are available to undergraduate and graduate students enrolled in a full time course at the University, in second and subsequent years. Particulars may be obtained from the U. of T. Alumni Association Alumni House, 18 Willcocks Street, Toronto, or from the Secretary of the Faculty.

OTHER ASSISTANCE

Children of War Dead (Education Assistance) Act

Children of War Dead (Education Assistance) Act provides fees and monthly allowances for children of veterans whose death was attributable to military service. Enquiries should be directed to the nearest District Office of the Department of Veterans Affairs.

Dental Officer Training Plan

The Canadian Forces offer a plan to assist dental students who enrol in the Royal Canadian Dental Corps.

In addition to pay and allowances for the rank in which the student is enrolled, provision is made for payment of tuition, instruments, supplies, and an allowance for books. To be eligible a student must be able to meet the Canadian Forces standards for enrollment, be a Canadian citizen, and be academically acceptable, without condition, to any one of the four professional years of the Dental Faculty. Five years service in the Canadian Forces as a dental officer is required after graduation.

Full details of the Dental Officer Training Plan may be obtained from the Canadian Forces Recruiting Centre, 25 St. Clair Avenue East, Toronto 7, or from the University Liaison Officer, Canadian Forces Base Toronto, Downsview, Ontario.

Ontario Department of Health Bursaries

In order to encourage and assist residents of Ontario to take dental training with a view to entering general practice in areas of the Province where dental services are inadequate, the Ontario Department of Health offers bursaries to students enrolled in the Faculty. This assistance is available for not more than three years during the course, and each student receiving a bursary has an obligation on graduation to enter general dental practice in a location acceptable to the Ontario Minister of Health. The return in service will be one calendar year for each academic year of bursary assistance given.

The value of the bursaries is $1,500 per year for single students or $2,000 for those with dependants. Further information and application forms are available from the Faculty Secretary.

Province of Ontario Student Awards Programme

Awards under this programme will be made available to all Ontario students provided:

(i) they are in full-time attendance at a Canadian University (or other eligible institution).

(ii) they can demonstrate need of financial assistance.

(iii) they are either Canadian citizens or landed immigrants, have resided in Ontario for at least twelve months prior to entering the course, and intend to reside permanently in Canada.

Each applicant's need will be assessed by the Department of University Affairs and awards will be part loan and part bursary.

Further information is printed on the application forms which may be obtained from the Faculty Secretary.

Summer Studentships

The Faculty's Division of Dental Research each year has a few openings for undergraduate students who are interested in research work. These studentships and assistantships are provided by grants, and are worth about $250 to $300 per month. Further information and application forms may be had from the Division of Dental Research.

CURRICULUM

First Year

Subject	Lecture Hours	Laboratory Hours	Total Hours
Anatomy—Oral, and Occlusion	30	60	90
Anatomy—Gross	98	112	210
Biochemistry.....	45	60	105
Chemistry, Organic.....	38	36	74
Clinical Orientation	10	8 (cs)	18
Histology	56	112	168
*Dental Materials and Technology..	10	112	122
*Restorative Dentistry.....	16	16	32
Total Hours.....	303	516	819

cs—Clinical Seminars

Second Year

Subject	Lecture Hours	Laboratory and Clinical Demonstration	Total Hours
History of Dentistry.....	5		5
Microbiology	33	78L	111
Orthodontics.....	30		30
Pathology, General.....	44	40L	84
Periodontics.....	20	9L, 6C	35
Physiology.....	58	60L	118
*Prosthodontics.....	10	190L	200
*Restorative Dentistry	50	80L, 98C	228
Total Hours.....	250	561	811

*These First and Second year subjects are those referred to as "pre-clinical subjects" in the calendar section dealing with Regulations and Examinations.

THIRD YEAR

Subject	Lecture Hours	Laboratory and Clinical Demonstration	Clinical Practice	Total Hours
Anaesthesia—General	12		*	12
—Local	24	4c		28
Clinical Orientation		8c		8
Clinical Practice			400	400
Dental Materials				3
Dental Public Health	5			5
Diagnosis	10		15	25
Essay Writing	4			4
First Aid	5			5
Medicine	30			30
Oral Surgery	20	6c		26
Orthodontics	31	6c	88	125
Pathology, Oral	35	26L		61
Paedodontics	33	8c	*	41
Periodontics	30	12L, 11c	*	53
Pharmacology	44	36L		80
Physiology of Occlusion	10			10
Practice Administration	7			7
Preventive Dentistry	41	2L; 3c	*	46
Prosthodontics	28	12c	*	40
Radiology	21	3c	8	32
Restorative Dentistry	37	9L; 29c	*	75
Surgery	21	8c		29
Total Hours	451	85L; 98c	511	1145

*Clinical practice includes all aspects of clinical practice conducted in the general clinic. No accurate division into specific departments is feasible.

The Third Year class follows the usual academic year until the end of examinations (about Mid-May). The students then return to the clinics and continue working there until the end of June.

FOURTH YEAR

Subject	Lecture Hours	Clinical Demonstration	Clinical Practice	Total Hours
Anaesthesia		12		12
Clinical Practice			510	510
Dental Public Health	7	2		9
Diagnosis	1		45	46
Jurisprudence, Ethics and Forensic Dentistry	11			11
Medicine	26	3		29
Oral Surgery	22		30	52
Orthodontics	20		70	90
Paedodontics	1		75	76
Periodontics	10		*	10
Practice Administration	18			18
Preventive Dentistry		4	*	4
Prosthodontics	20		*	20
Radiology	4	3	21	28
Restorative Dentistry	20		*	20
Total Hours	160	24	751	935

*Clinical Practice includes all aspects of clinical practice conducted in the general clinic. No accurate division into specific departments is feasible.

It is to be understood that the programme and regulations regarding courses of study and examinations contained in this Calendar may be modified from time to time to suit changing conditions.

ANATOMY, GROSS

During the first year of the dental course a total of 210 hours is devoted to studying the gross anatomy of the head, neck, brain and thorax, and examination of the abdominal viscera. During this time the students, working four to a cadaver, dissect a human body. Lectures, laboratories and television demonstrations stress the functional and practical aspects of gross anatomy, including radiological anatomy.

Thirty-two hours of neuroanatomy are studied and correlated with gross anatomy.

Professor J. S. Thompson and staff

ANATOMY, ORAL, AND OCCLUSION

The lecture course is designed to teach the student, (1) the external and internal anatomy of individual teeth of the primary and permanent dentitions, (2) variations and anomalies of dental morphology, (3) the relationship of the teeth within the maxillary and mandibular dentitions, (4) the relationship of the maxillary to the mandibular dentition, (5) the relationship of the teeth to associated structures within the stomatognathic system, (6) the static and dynamic fundamental principles of the occlusion of the primary, mixed and permanent dentitions, (7) basic concepts related to an introduction to malocclusion, (8) the chronology of the dentition, (9) the evolution of the dentition and, (10) comparative dental anatomy.

The laboratory sessions are designed to, (1) teach the student oral anatomy and occlusion, (2) develop a keen sense of observation, (3) cultivate a sensitive appreciation for meticulous detail, (4) provide experience in manual dexterity, and to motivate and discipline in preparation for clinical instruction.

Emphasis is directed to the relationship between form and function, and between basic instruction and clinical practice. First Year: 90 hours.

Assistant Professor J. G. Dale and staff

BIOCHEMISTRY

Lecture Course: A fundamental course is given in general metabolic processes and recent concepts in molecular biology. The subject matter includes: pH and acid-base balance; enzymology and enzyme kinetics; chemistry and metabolism of amino acids, proteins, lipids, carbohydrates and nucleic acids; energy metabolism; control mechanisms and biochemical genetics. First year, 45 hours.

Laboratory—The laboratory course consists of demonstrations, qualitative and quantitative experiments designed to illustrate the lecture course. First year, 60 hours.

Professor G. E. Connell and staff

CHEMISTRY

Lectures and Laboratories—Course No. 252.

A general introduction to organic chemistry dealing with the various series of aliphatic and aromatic compounds, their correlations, properties and the

preparation of characteristic members. Special attention is paid to compounds useful in dentistry. The student is required to undertake a number of organic preparations that illustrate the lecture work and so acquire a first-hand knowledge of the properties of many important organic compounds. First Year: 74 hours.

Professor Brooks and staff

CLINICAL DENTISTRY

In the Clinical Department the students correlate and put into practice, by means of dental service to patients, the knowledge of dentistry which they have acquired during the earlier years of their course. A minimum number of dental operations is required in each division of the Department. The work on patients is performed under strict supervision of the clinical instructors and each student's clinical accomplishments are graded upon quality of service and deportment.

A series of group clinics in the various phases of dentistry are conducted by the clinical staff throughout the clinical course. Group clinics are also given at the Toronto General Hospital and the Banting Institute to co-ordinate systemic diseases in relation to dental health.

Professor P. G. Anderson, Director of Clinic

CLINICAL ORIENTATION

This course is given in the First Year and is intended to orient the teaching in the fundamental subjects, given in that year, to clinical practice. Further instruction is given as part of the periodontics course in the Second Year. First Year: 18 hours.

Professor C. H. M. Williams and staff

DENTAL ANAESTHESIA

General and Local

Synopsis

The instruction is given during the Third and Fourth years. In the Third year a series of 24 lectures on local anaesthesia is given. This covers anatomy, theories of anaesthesia, applied pharmacology techniques, emergencies, medical conditions, physical evaluation, pre-medication, armamentarium, pre- and post-operative control of pain and a thorough discussion of all drugs associated with local anaesthesia.

Before commencing clinical practice the Third year is divided into groups and clinical demonstrations covering the essential techniques are carried out. The students then perform these injections on each other. A series of 12 lectures on general anaesthesia is given in the second term to the Third year. These lectures are to familiarize the students with theories, techniques, armamentarium and basic fundamentals of general anaesthesia as applied to Dentistry. Emphasis is placed on the teaching policy that this is not an attempt to instil knowledge of how to administer general anaesthesia.

The instruction in the Fourth year is mainly confined to the clinical application of general anaesthesia. The class is divided into groups with each group receiving five clinics. One clinic is reserved for a review and discussion of local anaesthesia, while another deals with emergencies which a dentist may at any time be confronted with. This clinic is in the form of a practical demonstration with the utilisation of a dummy which enables students to carry out respiratory resuscitation and circulatory resuscitation under actual conditions. In the remaining clinics, students have opportunity to observe and participate in dental procedures being performed under general anaesthesia. In addition to this, students are periodically assigned to a public clinic where general anaesthesia is utilised in treating school children. It is again stressed that the objective is not to give them competence in administering general anaesthetics, but rather to familiarize them with working conditions which are encountered when carrying out dental procedures under general anaesthesia.

SUMMARY

Third Year	
Local anaesthesia lectures	24 hours
Local anaesthesia clinics	4 hours
General anaesthesia lectures	12 hours
Fourth Year	
General anaesthesia clinics	12 hours

The students work from fixed centres and provide complete dental treatment for the patients assigned to them. This entails additional hours in the clinical use of local anaesthesia which cannot be calculated as they vary with the patients and with individual students. In addition to their assigned patients, they also gain experience in clinical anaesthesia during the hours of clinical practice of Oral Surgery which are listed in that section.

Professor R. S. Locke and staff

DENTAL MATERIALS AND TECHNOLOGY

BASIC DENTAL MATERIALS

The course is designed to impart a practical knowledge of basic materials used in dentistry, and to stimulate the development of the student's manual dexterity. Compounds, hydrocolloids and rubber impression materials, gypsum materials, denture base resins, zinc phosphate cements, dental amalgam, dental waxes, gold inlay casting procedures, gold soldering procedures and construction of a full upper denture are the subjects covered. First Year: 122 hours; Third Year: 3 hours.

Professor W. D. MacKay and staff

DENTAL PUBLIC HEALTH

The primary purpose of this course is to make the student more aware of his community. Current dental health problems and attitudes of the public to dental health are explained. The public health procedures used in dealing with these problems and other proposed solutions are discussed. The epidemiological approach to the study of dental disease is reviewed. Third Year: 5 hours. Fourth Year: 9 hours.

Associate Professor D. W. Lewis

DENTAL RADIOLOGY

The course in the Third Year and the Fourth Year covers all phases of Dental Radiology.

A series of lectures is given during the third year and during the second semester of the fourth year participating seminars are undertaken. Individual clinical instruction is given to the students on radiographic technique, processing of films, and mounting of radiographs. X-ray examinations of clinic patients are undertaken by Third and Fourth Year students. During the two final years full mouth surveys are reported upon by the students, and these are discussed and corrected by a member of the staff.

Instruction is also given in extra oral techniques.

Professor H. G. Poyton and staff

HISTOLOGY

The course in histology in First Year deals with the microscopic structure of the human body with special emphasis on the components of the oral cavity. During the first half of the course the microscopic anatomy of the tissues of the body and the body organ systems is presented. The second half of the course deals in detail with the development and microscopic structure of the dental tissues. First Year: 168 hours.

Professor A. R. Ten Cate and staff

HISTORY OF DENTISTRY

The history of dentistry is traced from earliest times to the present day, with special emphasis on its modern development, great names and major contributions. Second Year: 5 hours.

Assistant Professor J. G. Dale

JURISPRUDENCE, ETHICS AND FORENSIC DENTISTRY

The course on Jurisprudence includes discussion on the Sources of Law in Ontario, the Court System, and legal terminology. The Dentistry Act of Ontario, the By-laws of the Royal College of Dental Surgeons of Ontario, and the

Organization of Dentistry in Canada are explained. The legal position of the dentist and his responsibilities to the public are presented.

The lectures in Ethics present the meaning of the profession and the ethical relationship of the dentist to the public and his confreres.

The lectures in Forensic Dentistry include the role of the dentist in identification in mass disasters and police investigations.

Dr. K. F. Pownall
Mr. R. C. Shibley, Q.C.

LIBRARY PROCEDURE

A series of seminars intended to familiarize students with the use of the Library and to acquaint them with the systems of classification, cataloguing and filing, indexes, abstracts, reference works and bibliographical form.

Assistant Professor J. G. Dale and staff

MEDICINE

The lectures include diseases with which the dentist should be familiar, particularly those with oral manifestations. Third Year: 30 hours.

Theatre clinics are given at the Toronto General Hospital with presentation of patients to demonstrate the particular lesion under discussion. The fundamental principles used in the diagnosis and treatment of systemic disease are discussed. Fourth Year: 29 hours.

Professor K. J. R. Wightman and staff

MICROBIOLOGY

General

The course is designed to give the student a general knowledge of the various genera of bacteria, viruses, and fungi associated with the human body. The pathogenicity and epidemiology of the pathogens is discussed as well as the ecology of the saprophytes. Immunological relationships and the common immunochemical procedures are stressed. The bacteriological basis of antibiotic therapy is also explained. In the beginning of the laboratory course experience in common techniques is acquired, which is later applied to cultural studies and procedures for the isolation and identification of pathogens from exudates.

Second dental year–33 lecture hours, 78 laboratory hours.

Oral

In the second dental year five lectures are devoted to the bacteriology of the mucous membranes in general. At this time the pathogenic possibilities of the oral flora are considered. In addition, during the third dental year two lectures are devoted to the bacteriology of dental caries and in the fourth year three lectures are devoted to the bacteriological problems of Periodontal disease.

Laboratory Investigations

Supervised laboratory facilities in bacteriology are available to students of the third and fourth dental years for investigation of patients who are in their care.

Associate Professor E. M. Madlener

ORAL DIAGNOSIS

Fifteen lectures given in the Third Year are designed to cover a system of History Taking and Clinical Examination applicable to the diagnosis of dental and oral disease. The practical application of the subject is taught in the Third and Fourth Years in the Department of Oral Diagnosis where students also gain experience in Treatment Planning and the Management of Dental Emergencies.

Professor J. A. Pedler and staff

ORAL SURGERY

The basic didactic instruction is given in the Third Year and includes orientation, preoperative evaluation of patients for oral surgery and a consideration of basic surgical principles, instrumentation and techniques of tooth removal, dento-alveolar surgery, root resection, preparation of the mouth for prosthesis, pre- and post-operative care of patients, management of infections and the application of various drugs.

In the Fourth Year, lectures in oral surgery pertain to topics such as impacted and supernumerary teeth, deep infections, complications of maxillary sinus, cranial neuralgias, cysts and joint derangements and supportive care of patients following surgery.

The course includes assignment to the out-patient dental clinic at the Toronto General Hospital and at other hospitals acceptable to the Faculty Council. Throughout the year the students perform clinical operations under the supervision of the staff of the Oral Surgery Department of the Faculty of Dentistry. Third Year: 26 hours; Fourth Year: 52 hours.

Professor P. T. Smylski and staff

ORTHODONTICS

The Orthodontics Course comprises lectures, laboratory instruction, clinical seminars, and clinical practice in the Second, Third and Fourth Years.

The objectives of the course are to teach students to recognize, diagnose and intercept orthodontically the various forms of malocclusion, except those associated with systemic diseases and abnormalities in the skeleton.

This teaching is divided as follows:

(*a*) The work of the Second Year includes a series of lectures on the development and function of the face and facial skeleton with special reference to orthodontic problems in the dento-alveolar complex.

(*b*) The work of the Third year includes lectures, laboratory instruction, clinical seminars and clinical practice designed to teach the student the etiological factors important in the genesis of orthodontic abnormality. Cephalometric analysis is introduced as a basis for providing further knowledge of normal and abnormal facial and dentofacial development.

(*c*) The work of the Fourth year includes lectures, clinical seminars and clinical instruction in the diagnosis, treatment planning and the interception of orthodontic abnormalities. Second year: 30 hours. Third year: 125 hours. Fourth year: 90 hours.

Professor D. G. Woodside and staff

PAEDODONTICS

The basic paedodontic programme is developed during the Third and Fourth Years.

The didactic phase begins in the Third Year with a lecture series supplemented with television demonstrations. This lecture series develops the concept that paedodontics is concerned with continued growth and development of a child and a comprehension of the living processes as exhibited by the child. Teaching is eventually channelled towards specific dental problems for children and how they are treated.

The clinical phase of paedodontics is concerned with examination, diagnosis, prevention and treatment of dental abnormalities and dental disease in children. Clinical instruction and seminar teaching sessions begin during the latter part of the Third Year, but are mainly presented in the Fourth Year.

Third Year: 41 hours, plus clinical practice; Fourth Year: 76 hours.

Professor K. W. Davey and staff

PATHOLOGY

General

The course in general pathology consists of lectures and laboratory periods and is presented during the second half of the Second Year by the Department of Pathology in the Banting Institute. Thirty lectures, supplemented by demonstrations illustrating experimental procedures in pathology, emphasize fundamentals of pathology of special interest to dental students. These can be grouped into five major categories:

1. Inflammation, hypersensitivity and wound healing
2. Bacterial and viral infections
3. Disorders of growth
4. Disturbances of blood-vascular system
5. Special pathology (respiratory, gastro-intestinal and endocrine).

Second Year: 44 hours.

The laboratory sessions, comprising two-hour periods, are conducted concurrently with the lectures. Students are provided with microscopic and gross specimens of tissues exemplifying different forms of disease. Second Year: 40 hours.

Professor A. C. Ritchie and staff

Oral

During the Third Year a course of thirty-five lectures is devoted to discussion of diseases of the teeth, periodontium, tongue, oral mucosa, salivary glands and the oro-facial region in general.

The laboratory course consists of thirteen two-hour periods at which time students have the opportunity of studying the microscopic details of numerous lesions of special interest in the field of dentistry. Third Year: 61 hours.

Professor H. A. Hunter and staff

Laboratory Investigations

Supervised laboratory facilities in clinical pathology are available to students of the third and fourth years for investigation of patients who are in their care.

PERIODONTICS

An introduction to periodontics is provided in the "Clinical Orientation" course in the First Year, with students performing in the mouths of classmates certain simple procedures. Intensive instruction in periodontics commences in the Second Year. It includes lectures and practical problems in clinical practice. In the Third Year a further series of lectures is supplemented by demonstration clinics, laboratory practice and treatment of patients in the clinic. In the Fourth Year instruction is continued by lectures and clinical practice which prepare the student to perform more difficult operations. Second Year: 35 hours including clinical orientation; Third Year: 53 hours plus clinical practice; Fourth Year: 10 hours plus clinical practice.

Professor C. H. M. Williams and staff

PHARMACOLOGY

The course consists of lecture, tutorial and laboratory periods. In the course the following subject matter is covered; general principles of pharmacology, autonomic drugs and drugs acting on cardiovascular and respiratory systems, analeptics, sedatives, hypnotics, local and general anaesthetics, antibiotics and sulphonamides, antiseptics, toxicology and prescription writing. In the laboratory, experimental work in pharmacology is carried out to supplement the lectures and to stimulate the students' interest in the subject; tutorial periods are devoted to discussions of selected problems and topics in pharmacology which are of specific interest to dentistry. Third Year: Lectures 44 hours, laboratory and tutorial 36 hours.

Professor W. Kalow and Staff

PHYSIOLOGY

The instruction for the undergraduates consists of lectures and laboratory work. The lecture course includes the physiology of the blood, lymph, tissue fluids, circulation, respiration, digestion, kidney, nerve, muscle, receptor organs, voluntary and autonomic nervous systems, endocrine glands and metabolism. Emphasis is given to those aspects of physiology which are of especial importance in relation to dentistry. The aims of this course are to give a broad and sound basis on which the superstructure of more specialized knowledge of dentistry may be built. Second Dental Year: lectures, 58 hours.

Practical Physiology

The practical course comprises experiments on the physiology of nerve and muscle, blood, circulation, respiration, secretion and special senses. The needs of the dental students are kept in mind in the planning of these experiments. Second Dental Year: laboratory, 60 hours.

Professor R. E. Haist and staff

PHYSIOLOGY OF OCCLUSION

The normal and abnormal physiological processes related to functions of the teeth are discussed. The clinical manifestations and methods of analysis and correction which relate to the unfavorable influences of dysfunctions of the teeth are presented. Third Year: 10 hours.

Professor C. H. M. Williams

PRACTICE ADMINISTRATION

The course is directed along practical lines designed to provide the student with a better understanding of the problems encountered in the conduct of a dental practice. Third Year: 7 hours; Fourth Year: 18 hours.

under the general direction of Dr. J. Kreutzer

PREVENTIVE DENTISTRY

The principles of preventive dentistry have been organized as a single subject in order to emphasize prevention as a dental service, and to correlate and apply the basic sciences — biochemistry, bacteriology, physiology and nutrition — in maintaining healthy oral tissues.

The subjects of oral hygiene, functions of saliva, composition and structure of dental tissues, metabolic and dental aspects of fluoridation, topical fluorides and nutrition are covered. These lectures form the basis for evaluation of current knowledge relating to epidemiology, etiology and prevention of dental caries, periodontal disease and malocclusion, and the preventive aspects of various clinical areas are brought together. Clinical practice, laboratories and seminar periods in prevention extend and supplement the lecture material. Third Year: lectures 41 hours, laboratory and seminars 5 hours, plus clinical practice. Fourth Year: laboratory and seminar 4 hours, plus clinical practice.

Professor J. Kreutzer and staff

PROSTHODONTICS

Second Year

The course consists of laboratory lectures, demonstrations and practical instruction by means of technique projects in the basic biological aspects and fundamental principles of complete denture and partial denture prostheses.

The instruction includes the design and fabrication of complete dentures with special emphasis on occlusion and balanced articulation, immediate insertion type of complete dentures; cast framework types of removable partial dentures and rebasing techniques. Second Year: 200 hours.

Third Year

The lectures in complete and partial prosthesis are presented separately.

The subject matter deals with the basic biological and physiological principles involved. The practical clinical phases of all types of prosthesis are given comprehensive coverage.

In complete denture prosthesis the entire class is instructed visually by a sequence of live television presentations. During these sessions a clinician demonstrates the actual clinical treatment of an edentulous patient.

Partial denture training is advanced to the clinical stage by a series of lectures. This prepares the student to accept and treat simple clinical cases. Third Year: 40 hours, plus clinical practice.

Fourth Year

Lectures and seminars concentrate upon the more advanced clinical procedures in complete and partial prosthesis. This is again supplemented by a series of television presentations. Throughout the year the knowledge of the student is given practical application by the assignment of patients in the prosthodontic clinic. Fourth Year: 20 hours, plus clinical practice.

Professor R. L. Twible and staff

RESTORATIVE DENTISTRY

Operative Crown and Bridge Endodontics

In the First Year the student is introduced to dental instruments and conducts exercises in their use to develop his manual ability. The lecture programme describes the basic principles of cavity preparation in the treatment of dental caries, which the student implements in chalk carvings. First Year: lectures 16 hours, laboratory 16 hours.

In the Second Year the various restorative treatments for caries are described with the tooth preparations required to receive the specific dental materials. These procedures are practised on chalk teeth in the laboratory, and on extracted teeth in a clinical environment. In addition, the student is introduced to the physiology of occlusion and the determinants influencing it. Occlusal waxing techniques are taught to project the First Year oral anatomy course into the dynamics of occlusion as the student constructs crown and bridge restorations. The mechanics of bridge construction are also taught in the laboratory exercises. Each student completes one amalgam restoration for a live patient in the clinic as a practical means of clinic orientation. Second Year: lectures 50 hours, laboratory 80 hours, clinic 98 hours.

In the Third Year these earlier principles are applied clinically when treating patients, using both single and multiple restorations. Lectures are given in the diagnosis, treatment planning and treatment execution procedures required for physiologically and mechanically sound fixed restorations. Third Year: lectures 22 hours, laboratory and clinical demonstration 32 hours, plus clinical practice.

In a clinical laboratory course, all procedures required for record taking and for mounting and setting a semi-adjustable articulator are practised. Occlusal correction techniques are emphasized for ensuring that the bridge is physiologically acceptable to the patient.

In the Fourth Year, lectures and seminar discussions permit case presentations designed to illustrate diagnosis and treatment planning required in correcting dysfunctions and their concomitant disorders arising within the masticating system. Fourth Year: lectures 17 hours, plus clinical practice.

The fundamental procedures of Endodontics are provided through lectures in the Third and Fourth Years followed by clinical practice for Endodontic patients. Third Year: lectures 15 hours, clinical demonstration 6 hours, plus clinical practice. Fourth Year: lectures 3 hours, plus clinical practice.

Professor J. Hibberd and staff

SURGERY

General Surgery

A series of lectures designed to introduce the student to the general principles of surgery and to inform him with regard to surgical conditions with which the dentist should be familiar. Third Year: 29 hours.

Professor W. R. Drucker and staff

ESSAYS

Third Year

1. In the first term students will receive a series of four lectures given by a member of the Department of English. These lectures are designed to provide a brief course of instruction in the principles of composition, guidance in the use of the library, and in reference.

2. During the latter part of the second term, each student will be assigned a title for the Fourth Year essay. Deviations from assigned titles will be permitted only in the case of competitive essays or in special circumstances approved by the Essays Committee.

3. Any eligible student submitting an essay in competition for the Colgate-Palmolive Scholarship may revise and resubmit this essay the following year in fulfilment of his Fourth Year essay requirement.

Fourth Year

1. Each student shall submit a satisfactory essay as a requirement for graduation.

2. In the first term each student shall have at least one interview with the instructor in English, and must arrange a consultation with the technical department concerned, while the essay is in draft form.

3. The list of references used in each essay shall be approved by the member of the Faculty of Dentistry assigned to act as examiner.

4. Any student may, if he so wishes, elect to write on any one of the stated prize titles instead of his assigned title. Those choosing the C.D.A. competition must submit a second copy of the essay, which may be a carbon.

5. Each student will receive written notice of his assigned title along with instructions regarding its proper format.

6. The essay shall be submitted to the Secretary not later than 12 noon on the first Monday in December. Failure to meet this deadline will result in loss of marks and such other penalties as may apply.

7. The length of the essay, exclusive of reference list etc., shall not exceed 4000 words.

8. The essays may be returned after the release of final marks.

BOOK KITS

The following printed notes and other materials will be issued to all students at the time of registration or during term.

First Year

Dental Caries Computer.
Outline Guide for Scientific Writing.
A System of Examination and Treatment Planning.
Anatomy of the Primary Dentition.
Syllabus of Comparative Dental Anatomy, issued by the Department of Zoology.

Second Year

Classification of Malocclusion.
Histopathology Manual.
Manual of Orthodontic Technique for Dental Students.
Undergraduate Orthodontics Lecture Curriculum.

Third Year

Outline for History Taking and Phys. Examinations.
A Syllabus of Endodontic Treatment.
Endodontia Bulletin.
Paedodontic Lecture Notes.
The Dental Pulp and Restorative Dentistry.
Cephalometric Notes for Dental Students.
Manual of Orthodontic Technique for Dental Students.
Preventive Dentistry Students' Manual.
A System of Examination and Treatment Planning.
Accepted Dental Remedies.
Classification of Malocclusion.
Routine Use of Minute Forces in Orthodontics.

Fourth Year

Essay covers.
Dietary Program for the Control of Dental Caries, Jay.
Early Second Molar Extractions in Orthodontics.

TEXT-BOOKS

The following text-books are used in the courses shown. To assist students in planning their purchases, the relative importance of each book is indicated: every student must have a copy of those marked "required"; students are urged to provide themselves with those marked "recommended"; those marked "reference" may be bought, but library copies will be available.

First Year

ANATOMY, GROSS

Students will be advised in September regarding prescribed texts.

ANATOMY, ORAL

An Atlas of Tooth Form, Wheeler, 3rd ed. (required).

Introduction to Dental Anatomy, Scott and Simmons (reference).

A Textbook of Dental Anatomy and Physiology, Wheeler (reference).

Occlusion, Ramfjord and Ash (reference).

The Physiology of Occlusion, Posselt (reference).

BIOCHEMISTRY

Principles of Biochemistry, White, Handler and Smith.

Introduction to Modern Biochemistry, Karlson.

Cell Structure and Function, Loewy and Siekevitz.

DENTAL MATERIALS

The Science of Dental Materials, Skinner and Phillips, 5th ed. (recommended).

Restorative Dental Materials, Peyton and Associates, 2nd ed. (reference).

HISTOLOGY

Students will be advised in September which books they require.

RESTORATIVE DENTISTRY

Operative Dentistry, Black, Vol. 2 (reference).

Second Year

GENERAL PATHOLOGY

Principles of Pathology for Dental Students, Walter, Hamilton and Israel (recommended).

MICROBIOLOGY

Review of Medical Microbiology, Jawetz (required).

ORTHODONTICS

Orthodontic Principles and Practice, Graber (required).

PHYSIOLOGY

Laboratory Outline in Physiology (edited by Haist).

The Living Body, Best and Taylor.

PROSTHODONTICS

Complete Dentures, Swenson (reference).

Clinical Dental Prosthesis, Fenn, Liddelow and Gimson (reference).

Complete Denture Prosthesis, Gehl and Dresen (reference).

Partial Dentures, Swensen and Terkla (reference).

RESTORATIVE DENTISTRY

Physiology of Occlusion and Rehabilitation, POSSELT, 2nd ed. (required).
Occlusion, RAMFJORD AND ASH (required).
Rubber Dam and Goldfoil Procedures, INGRAHAM, KOSER AND BASSETT (reference).
Cast Gold Procedures, BASSETT, INGRAHAM AND KOSER (reference).
Operative Dentistry, BLACK, Vol. 2 (reference).
Clinical Operative Dentistry, SIMON (reference).
Modern Practice in Crown and Bridge Prosthodontics, JOHNSON, PHILLIPS AND DYKEMA (reference).
Theory and Practice of Crown and Bridge Prosthodontics, TYLMAN (reference).

THIRD YEAR

ANAESTHESIA

Essentials of General Anaesthesia with Special Reference to Dentistry, MACINTOSH AND BANNISTER (reference).
Local Anaesthesia and Pain Control in Dental Practices, MONNHEIM (required).
A Manual of Dental Anaesthesia, ARCHER (reference).

DENTAL PUBLIC HEALTH

The Dentist, His Practice and His Community, YOUNG AND STRIFFLER (reference).

ENDODONTICS

Clinical Endodontics, SOMMER, OSTRANDER AND CROWLEY, 3rd ed. (recommended).
Endodontic Practice, GROSSMAN, 6th ed. (recommended).
Endodontics, INGLE (reference).

ORAL PATHOLOGY

Oral Pathology, SHAFER, HINE AND LEVY, 2nd ed. (recommended).

ORTHODONTICS

Handbook of Orthodontics, MOYERS (required).
Orthodontic Principles and Practice, GRABER (required).

PERIODONTOLOGY

Occlusion, RAMFJORD AND ASH (required).
Oral Medicine, BURKET (reference).
Clinical Periodontology, GLICKMAN (recommended).
Periodontal Therapy, GOLDMAN, SCHLUGER AND FOX (reference).
Physiology of Occlusion and Rehabilitation, POSSELT (reference).

PHARMACOLOGY

Pharmacology in Medicine, DRILL, 3rd ed. (reference).
Pharmacological Basis of Therapeutics, GOODMAN AND GILMAN, 3rd ed. (reference).

PRACTICE ADMINISTRATION

Dental Practice Administration, STINOFF, 3rd ed. (recommended).
Work Simplification in Dental Practice, KILPATRICK (recommended).
The Business Management of Dental Practice, SARNER (reference).
Modern Dental Practice, HOLLANDER (reference).

PREVENTIVE DENTISTRY

The Physiology of the Mouth, JENKINS, 3rd ed. (recommended).
Basic Nutrition, McHENRY (reference).
Nutrition for Today, ROBERTSON (reference).
Chemistry and Prevention of Dental Caries, SOGGNAES (reference).
Symposium on Preventive Dentistry, MUHLER AND HINE (reference).
Principles of Preventive Dentistry, GOOSE AND HARTLES (reference).
Nutrition—A Comprehensive Treatise, Volume I, Chapter 8, NIKIFORUK AND GRAINGER (edited by Beaton and McHenry) (reference).
Improving Dental Practice Through Preventive Measures, BERNIER AND MUHLER (recommended).
The Science of Nutrition and its Application to Clinical Dentistry, NIZEL (recommended).

PROSTHODONTICS

Complete Dentures, SWENSON, 5th ed. (recommended).
Complete Denture Prosthesis, GEHL AND DRESEN (reference).
Fixed Partial Prosthesis, EWING (reference).
Partial Denture Construction, McCRACKEN, 3rd ed. (recommended).
Removable Partial Dentures, GODFREY (reference).

RADIOLOGY

Principles and Practice of Oral Radiological Interpretation, WORTH (recommended).
A Manual of Dental and Oral Radiography, BLACKMAN AND POYTON (recommended).
Clinical Dental Roentgenology, McCALL AND WALD (reference).

RESTORATIVE DENTISTRY

Physiology of Occlusion and Rehabilitation, POSSELT, 2nd ed. (required).
Occlusion, RAMFJORD AND ASH (required).
Rubber Dam and Goldfoil Procedures, INGRAHAM, KOSER AND BASSETT (reference).
Modern Practice in Crown and Bridge Prosthodontics, JOHNSON, PHILLIPS AND DYKEMA (reference).
Theory and Practice of Crown and Bridge Prosthodontics, TYLMAN (reference).
Modern Gnathological Concepts, LUCIA (reference).

SURGERY

Oral Surgery, ARCHER.
Practical Oral Surgery, CLARK.
Textbook of Surgery, MACFARLANE AND THOMAS, 2nd ed.

FOURTH YEAR

DENTAL PUBLIC HEALTH

As Third Year.

JURISPRUDENCE AND ETHICS

Carnahan's The Dentist and the Law, SARNER, HOWARD AND PARKS, 2nd ed.

MEDICINE

Cecil & Loeb's Textbook of Medicine, BEESON AND McDERMOTT, 11th ed.

ORAL PATHOLOGY

Oral Pathology, TIECKE (reference).
Oral and Dental Diagnosis, THOMA AND ROBINSON, 5th ed.
Oral Medicine, BURKET, 5th ed.
Dynamics of Oral Diagnosis, CHERASKIN AND LANGLEY.

ORAL SURGERY

Oral Surgery, THOMA, 2 v.
Pathology for the Surgeon, BOYD, 7th ed.
Textbook of Oral Surgery, KRUGER.

ORTHODONTICS

As Third Year.

PRACTICE ADMINISTRATION

As Third Year.

PREVENTIVE DENTISTRY

As Third Year.

PROSTHODONTICS

Syllabus of Complete Dentures, HEARTWELL (recommended).
Complete Dentures, SWENSON (edited by Boucher) 5th ed. (recommended).
Complete Denture Prosthesis, GEHL AND DRESEN (reference).
Theory and Practice of Crown and Bridge Prosthesis, TYLMAN (reference).
Complete Denture Prosthesis, NAGEL AND SEARS (reference).
Partial Denture Prosthesis, SWENSON AND TERKLA (reference).
Modern Practice in Removable Partial Prosthodontics, DYKEMA, CUNNINGHAM AND JOHNSTON (reference).

RESTORATIVE DENTISTRY

As Third Year.

THE DENTAL LIBRARY

The Dental Library consists of two divisions: a department of the main University Library, and the Harry R. Abbott Memorial Library. However, the Library is run as a single unit, and the books are listed together in the catalogue of the Dental Library as well as that of the University Library. The collection contains about 10,000 books and bound journals, as well as many pamphlets, reprints, and unbound journals, and currently receives about 200 periodicals.

The Harry R. Abbott Memorial Library was established as the result of a bequest in memory of a graduate, the late Dr. Harry R. Abbott. The fund is administered by the Royal College of Dental Surgeons of Ontario, which itself also makes an annual grant to the Library.

The extensive Dental Library thus created not only possesses a representative and rather complete collection of modern dental books and journals, but also some first editions and early dental literature. In addition to the Dental collection, there are a great many books and journals relating to Medicine and the Sciences.

The Library privileges, besides being for the students and staff of the Faculty of Dentistry and of the University, are extended, under certain conditions, to the graduates.

DENTAL STUDENTS' SOCIETY

The Students' Society is the official undergraduate organization in the Faculty of Dentistry, and is the medium of communication between the student body and the Faculty Council, the University authorities, and the students of other Faculties.

Each full-time undergraduate registrant in the Faculty is *ipso facto* a member of the Society, which organizes and controls the athletic, dramatic, literary, social and other group activities of the student body.

Faculty representatives are appointed each session to encourage and assist the students in their participation in extra-curricular activities.

LICENCE FOR DENTAL PRACTICE

A degree in dentistry does not, in itself, confer the right to practise dentistry in any part of Canada. To acquire this right a university graduate in dentistry must hold the certificate of the dental licensing body of the province in which he elects to engage in practice. Each provincial licensing body determines what the matriculation and professional requirements shall be and when registration is to be effected.

In each of the provinces of Canada, the Legislature has enacted laws regulating the practice of dentistry, and in each province the dental act provides for a corporate body, which grants licences to practise dentistry within that province.

LICENCE TO PRACTISE IN ONTARIO

A candidate desiring to practise dentistry in Ontario should consult the Registrar-Secretary, Royal College of Dental Surgeons of Ontario, 230 St. George Street, Toronto 180, Ontario.

LICENCE TO PRACTISE IN OTHER PROVINCES OF CANADA

A candidate who desires to acquire the right to practise in Canada elsewhere than in the province of Ontario should obtain information regarding the requirements for practice in the province concerned. A list of the officials follows:

Alberta—Registrar, Alberta Dental Association, 9901 – 108 Street, Edmonton 14, Alberta.

British Columbia—Registrar, College of Dental Surgeons of British Columbia, 325 Medical-Dental Building, 925 W. Georgia Street, Vancouver 1, B.C.

Manitoba—Registrar, The Manitoba Dental Association, 308 Kennedy Street, Winnipeg 2, Manitoba.

New Brunswick—Registrar, New Brunswick Dental Society, 169 Main Street, Nashwaaksis, N.B.

Newfoundland—Registrar, Newfoundland Dental Board, 103 LeMarchant Road, St. John's, Nfld.

Nova Scotia—Registrar, Provincial Dental Board of Nova Scotia, 1584 Robie Street, Halifax, N.S.

Prince Edward Island—Registrar, The Dental Association of Prince Edward Island, 129 Kent Street, Suite 305, Charlottetown, P.E.I.

Quebec—Registrar, College of Dental Surgeons of the Province of Quebec, 801 Est, Rue Sherbrooke, Montreal 132, P.Q.

Saskatchewan—Registrar, The College of Dental Surgeons of Saskatchewan, 606 Canada Building, Saskatoon, Saskatchewan.

LICENCE TO PRACTISE ELSEWHERE THAN CANADA

A candidate who desires to acquire the right to practise elsewhere than Canada should obtain information regarding the requirements for practice from the dental authorities in the country in which he wishes to practise.

THE NATIONAL DENTAL EXAMINING BOARD OF CANADA

For information concerning the certificate of qualification of the National Dental Examining Board of Canada, application should be made to the Secretary of the Board, 225 Metcalfe Street, Ottawa.

GRADUATE AND POSTGRADUATE COURSES

The Faculty of Dentistry, University of Toronto, offers instruction to graduate dentists in courses ranging from short continuous courses to extended courses

leading to diplomas and degrees. Details of these courses, and information regarding the extramural programme, will be found in the Announcement of the Division of Post-graduate Dental Education, which may be obtained upon application to the Secretary, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto 101, Canada.

COURSE IN DENTAL HYGIENE

For information regarding the course in Dental Hygiene see the Announcement of the Division of Dental Hygiene, which may be obtained from the Secretary, Faculty of Dentistry, 124 Edward Street, Toronto 101, Ontario.

DEVONSHIRE HOUSE

Devonshire House, the University Residence for Men, was established as a non-teaching college, or Hall of Residence, in 1907. The House, with a total membership of nearly two hundred, actually comprises three houses which form a quadrangle opening onto Devonshire Place. It is near the centre of the University, within a few minutes' walk of Hart House, and enjoys a valuable common room and college life. Academically, its members are selected from almost all Faculties of the University; geographically, from across Canada and from all parts of the world. The Faculty is represented by the Dean and six Dons, drawn from the staff in a variety of Departments, who live in the Residence and are available to assist members whenever possible, for example with academic and other difficulties and with post-graduate plans. The sharing of a college life in the Residence with members of the Faculty, as well as other students of varied courses and background, may make a significant contribution to the general education of members of the Residence. Each of the three houses of Devonshire House elects a President and Executive, and there is an overall Residence Council made up of the three House Presidents and two other elected members from each house, which meets about once a month in the Dean's Rooms to consider matters affecting the Residence as a whole. The direction of Devonshire House is in the hands of the Dean, who is assisted in this matter by the Residence Council, Dons' Committee, and Devonshire Committee (an advisory body appointed by the President of the University and which includes a number of Deans of professional Faculties). House rules have been, and are, set up after consultation which may involve all of these bodies. The facilities of the Residence include a Library, music listening room, music practice room, Common Rooms, kitchenettes, laundry room, TV room and games rooms. It is customary for freshmen to share a double room; there are single rooms and suites for senior students.

Requests for application forms, and other inquiries, should be directed to the Secretary to the Dean, Devonshire House, University of Toronto. It is advisable to make application for residence as early as possible.

NEW COLLEGE

New College is a multifaculty co-educational college; in addition to students from the Faculty of Arts and Science those from other Faculties and Schools are eligible for membership. This gives students from all divisions of the University the opportunity to participate in the life of a college and to associate with students in other fields of study. Tutorial classes are provided for First Year students in some subjects.

The new building, centrally located on the west campus, provides academic, social and dining facilities for all members of the College and in addition offers residence accommodation.

Students in the Faculty of Dentistry interested in becoming members should write to the Registrar, New College, University of Toronto, indicating whether they wish accommodation in the residence.

INNIS COLLEGE

Innis College was constituted on July 1, 1964, and admitted its first students in the following September. It is a multi-faculty college of the University of Toronto, and includes undergraduate students in all Faculties and Schools of the University.

A special feature is the Writing Laboratory. This service offers assistance to Innis College students in the skills and methods of writing essays and other academic reports. A staff of experienced teachers is available to give individual instruction.

The College has limited residential space available in houses on campus. Separate application for residence accommodation must be made directly to the Residence Co-ordinator of Innis College.

Students entering First Year will be invited to apply for membership after they have been accepted into their Faculty or School. Students entering the Second to Fourth Years who wish to join the College should obtain an application form from the Registrar, Innis College, University of Toronto.

A special college fee of $15 is payable to the Chief Accountant of the University of Toronto. This payment is made after the applicant has received notice of his acceptance by Innis College.

OFF-CAMPUS ACCOMMODATION

Housing Service. For the convenience of those students who are not able to find accommodation in the University and College residences, the University maintains a listing of rooming houses, flats, apartments and homes. Information on these rooms may be obtained through the Housing Service office at 45 St. George Street, Toronto 5. Off-campus housing of this nature is not subject to University regulation; however, every effort is taken to make the information on the accommodation as complete as possible and students are

encouraged to assist in this effort by reporting on the quality of the accommodation which they have occupied.

Ontario Student Housing Corporation. A modern student housing complex, located near the campus, is owned by the Corporation and is operated by it for the University of Toronto. When fully developed it will offer more than 700 unfurnished apartments, with stoves and refrigerators supplied. There are restaurant and shopping facilities. Occupancy is usually limited to students of the University of Toronto and preference is given to married students. Enquiries should be addressed to the University of Toronto Housing Service, 49 St. George Street, Toronto 5.

Campus Co-operative Residence Incorporated offers residence and apartment accommodation for graduate and undergraduate students. Total occupancy is 300 in residence, half male, half female, and 50 in apartments. Meals are provided, and non-residents are invited to eat at the Co-op Dining Rooms. The University of Toronto has no official connection with Campus Co-operative Residence, Inc., and inquiries should be addressed direct to Campus Co-operative Residence Inc., 395 Huron Street, Toronto 5, Ontario, telephone 921-3168 (area 416).

Rochdale College operates on a co-operative system and offers student accommodation of varying forms: single and double rooms, suites and apartments. Total accommodation is about 850, male and female, and the building includes a cafeteria. Rochdale College has no official connection with the University of Toronto, and all enquiries should be addressed to Rochdale College Reservations Office, 395 Huron Street, Toronto 5, telephone 921–3168 (area 416).

St. Andrew's—University Day Nursery. Married students with children may be interested in this day nursery, which provides pre-school education and day care for children aged two to five. It was established and is supported by the University of Toronto, the Graduate Students' Union and the Students' Administrative Council. Information may be obtained from the Nursery at St. Andrew's United Church, 117 Bloor Street East (telephone 921–7078) or from the School of Graduate Studies.

SUMMARY OF REGISTRATION

1969–70

First Year	125
Second Year	119
Third Year	130
Fourth Year	124
Postgraduate and Graduate Students	77
Course in Dental Hygiene	93
Special Students (undergraduate)	2
	670

CALENDAR 1970

Jan.							Feb.							Mar.							April						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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4	5	6	7	8	9	10	8	9	10	11	12	13	14	8	9	10	11	12	13	14	5	6	7	8	9	10	11
11	12	13	14	15	16	17	15	16	17	18	19	20	21	15	16	17	18	19	20	21	12	13	14	15	16	17	18
18	19	20	21	22	23	24	22	23	24	25	26	27	28	22	23	24	25	26	27	28	19	20	21	22	23	24	25
25	26	27	28	29	30	31	....	....	....	....	....	....	....	29	30	31	....	....	....	....	26	27	28	29	30	....	....
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May							June							July							Aug.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22
24	25	26	27	28	29	30	28	29	30	....	....	....	....	26	27	28	29	30	31	....	23	24	25	26	27	28	29
31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	30	31	....	....	....	....	....

Sept.							Oct.							Nov.							Dec.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12
13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19
20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26
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CALENDAR 1971

Jan.							Feb.							Mar.							April						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13	4	5	6	7	8	9	10
10	11	12	13	14	15	16	14	15	16	17	18	19	20	14	15	16	17	18	19	20	11	12	13	14	15	16	17
17	18	19	20	21	22	23	21	22	23	24	25	26	27	21	22	23	24	25	26	27	18	19	20	21	22	23	24
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May							June							July							Aug.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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2	3	4	5	6	7	8	6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14
9	10	11	12	13	14	15	13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21
16	17	18	19	20	21	22	20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28
23	24	25	26	27	28	29	27	28	29	30	....	....	....	25	26	27	28	29	30	31	29	30	31	....	....	....	....
30	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Sept.							Oct.							Nov.							Dec.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
....	....	....	1	2	3	4	....	....	....	....	....	1	2	....	1	2	3	4	5	6	....	....	....	1	2	3	4
5	6	7	8	9	10	11	3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
12	13	14	15	16	17	18	10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
19	20	21	22	23	24	25	17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
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UNIVERSITY OF TORONTO

Faculty of Dentistry

ANNOUNCEMENT FOR 1970-1971

DIVISION OF POSTGRADUATE DENTAL EDUCATION

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DIVISION OF POSTGRADUATE DENTAL EDUCATION

CALENDAR 1970–1971

1970			
Mar.	15	*Sunday*	Last day for receiving applications (at School of Graduate Studies) for admission to M.Sc.D. courses.
June	1	*Monday*	Diploma Course in Orthodontics: classes begin.
July	1	*Wednesday*	Dominion Day. University buildings closed.
Aug.	1	*Saturday*	Last day for receiving application for admission to occasional studies.
Aug.	3	*Monday*	Civic Holiday. University buildings closed.
Aug	17	*Monday*	Diploma Course in Paedodontics: classes begin.
Aug.	31	*Monday*	Opening of introductory course for overseas students in Dental Public Health, at the School of Hygiene.
Sept.	7	*Monday*	Labour Day. University buildings closed.
Sept.	14	*Monday*	Diploma Courses (other than Orthodontics and Paedodontics): classes begin.
Sept.	10, 11	*Thursday & Friday*	Registration for all students (at Faculty of Dentistry, mornings).
Oct.	12	*Monday*	Thanksgiving Day. University buildings closed.
Nov.	11	*Wednesday*	Remembrance Day.
Dec.	1	*Tuesday*	Last day for receiving applications for admission to B.Sc.D. courses and the diploma courses (except Dental Public Health).
Dec.	18	*Friday*	Term ends at 5 p.m.
Dec.	25	*Friday*	Christmas Day. University buildings closed.
1971			
Jan.	1	*Friday*	New Year's Day. University buildings closed.
Jan.	4	*Monday*	Second Term begins.
April	1	*Thursday*	Last day for receiving applications for admission to the diploma course in Dental Public Health.
April	9	*Friday*	Good Friday. University buildings closed.
May	24	*Monday*	Victoria Day. University buildings closed.
May	28	*Friday*	Start of University Commencement.
July	1	*Thursday*	Dominion Day. University buildings closed.

ADMINISTRATIVE OFFICERS

1969–1970

THE UNIVERSITY

President . . C. T. Bissell, M.A., Ph.D., D. ès L., D.Litt., LL.D., F.R.S.C.
Assistant to the President . . . . . N. S. C. Dickinson, C.D., B.A.

Executive Vice-President (Academic) and Provost . . . J. H. Sword, M.A.
Vice-Provost and Executive Assistant to the President D. F. Forster, B.A., A.M.

Executive Vice-President (Non-Academic) . . A. G. Rankin, B.Com., F.C.A.
Executive Assistant to the Executive Vice-President (Non-Academic) J. F. Brook
Vice-President (Administration) . . . . . F. R. Stone, B.Com., F.C.A.
Secretary of the Board of Governors . . . . . D. S. Claringbold
Director of Administrative Services . . . . . M. A. Malcolm, B.A.
Director of Physical Plant . . . . . F. J. Hastie, B.Sc., P.Eng.
Director of Finance . . . . . (to be appointed)

Vice-President (Health Sciences) . . . J. D. Hamilton, M.D., F.R.C.P.(C)
Vice-President (Research Administration)
G. de B. Robinson, M.B.E., B.A., Ph.D., F.R.S.C.
Director of the Office of Research Administration Miss S. Dymond, B.A., Q.C.

Vice-President and Registrar, and Secretary of the Senate
R. Ross, M.B.E., M.A.
Executive Assistant to the Vice-President and Registrar, and Assistant Secretary of the Senate . . . . . W. Kent, M.A.

Vice-President and Graduate Dean
E. Sirluck, M.B.E., M.A., Ph.D., LL.D., F.R.S.C.

Chief Librarian . . . . . R. H. Blackburn, M.A., B.L.S., M.S., LL.D.

Director of University Extension . . . . . G. H. Boyes, M.A.

Director of Admissions . . . . . E. M. Davidson, B.A.
Director of Student Awards . . . . . Miss H. L. Reimer, B.A., B.Ped.
Secondary School Liaison Officer . . . . . W. A. Hill
Director of Statistics and Records . . . J. M. Tusiewicz, M.A.Sc., M.B.A.
Director of University Health Service
G. E. Wodehouse, M.C., M.D., F.R.C.P.(C), M.R.C.P.
Assistant Director of University Health Service
—Women . . . . . Miss F. H. Stewart, B.A., M.D.
Director of Career Counselling and Placement Centre A. W. Headrick, M.A.
Director of International Student Centre . . . . . Mrs. K. Riddell, B.A.
Director of the Advisory Bureau
D. J. McCulloch, B.A., M.D., D.Psych., F.R.C.P.(C)
Director of Housing Service . . . . . Mrs. M. G. Jaffary, B.A.

Director of University of Toronto Press . . . . M. Jeanneret, B.A., LL.D.

Director of Information . . . . . K. S. Edey
Director of Alumni Affairs . . . . . J. C. Evans, B.A.
Director of Development . . . . . R. L. Jones

Warden of Hart House . . . . . E. A. Wilkinson, B.A.
Director of Athletics and Physical Education
—Men . . . . . W. A. Stevens, B.S.
Director of Athletics and Physical Education
—Women . . . . . Miss A. Hewett, B.Ed., P.E.

ADMINISTRATIVE STAFF

1969–1970

THE FACULTY OF DENTISTRY

Acting Dean . . . . . P. G. Anderson, D.D.S.
Secretary . . . . . A. G. Read
Associate Dean and Director, Division of Postgraduate Dental Education . . . . . A. M. Hunt, D.D.S., D.D.P.H., M.Sc.D.
Chairman (Clinical Sciences), Division of Postgraduate Dental Education G. S. Beagrie, L.D.S.R.C.S., F.D.S.R.C.S., D.D.Sc.(Edin.)
Chairman (Biological Sciences), Division of Postgraduate Dental Education . . . . . G. Nikiforuk, D.D.S., M.S.(ILL.)
Library Chairman . . . . . J. G. Dale, B.A., D.D.S.
Staff Librarian . . . . . Miss P. M. Smith, B.A., B.L.S.

Correspondence

Communications should be addressed to the Director, Division of Postgraduate Dental Education, Faculty of Dentistry, 124 Edward Street, Toronto 101, Ontario, Canada.

INTRODUCTION

A variety of opportunities for study are offered graduates in dentistry through the Division of Postgraduate Dental Education, Faculty of Dentistry. These programmes of education are classified under one of three general headings, namely—graduate, postgraduate, and continuing education.

Graduate Education

Courses of study leading to either the degree of Master of Science in Dentistry or to the degree of Doctor of Philosophy may be arranged through the Faculty in collaboration with the School of Graduate Studies of the University of Toronto. These programmes are designed specifically to train dental graduates to become research workers. Details may be found on pages 12 and 13 in this calendar, and in the calendar of the School of Graduate Studies.

Postgraduate Education

Three types of postgraduate programme are available as follows:

(*a*) *Diploma Courses.* Courses are offered in the specialist fields of Dental Public Health, Oral Surgery and Anaesthesia, Orthodontics, Paedodontics, and Periodontics. Details may be found on page 16 in this calendar.

(*b*) *Bachelor of Science in Dentistry.* This degree programme was established in the Faculty to permit a limited number of candidates who do not wish to become specialists in a clinical field, or who do not wish to take the intensive training required of a Master's candidate, to engage in a more casual but formal programme of study. Courses may be arranged to improve and extend a candidate's knowledge in either the academic or the clinical fields of dentistry.

A special programme is offered to provide a limited number of candidates with extra qualification in the field of Anaesthesia as it Applies to Dentistry. Further discussion of the Bachelor of Science in Dentistry degree programme may be found on page 14 of the calendar.

(*c*) *Occasional Studies.* Dental graduates may be permitted to register through the Postgraduate Division as special students not proceeding to a degree or diploma, to take individual courses during an academic session. Under this arrangement dental graduates can further their education in an area of special interest to them, without interrupting their working routine to the degree that the more formal courses demand.

Occasional students are admitted if space permits. They are expected to make application by August 1.

Dental internes at the Toronto General Hospital, the Toronto Western Hospital and the Hospital for Sick Children are advised to register with the Faculty as special students.

Continuing Education

A number of short intensive courses of instruction for dental graduates are provided each academic session to review knowledge of particular fields of dentistry, and to acquaint graduates with newer methods and procedures in various clinical areas.

In addition, in co-operation with the Board of Directors of the Royal College of Dental Surgeons of Ontario, lectures and clinics in a variety of subjects pertinent to dentistry are provided to meetings of local dental societies throughout the Province.

For further information address enquiries to the Chairman (Clinical Sciences), Division of Postgraduate Dental Education, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto 101, Ontario, Canada.

GENERAL INFORMATION

FACILITY IN ENGLISH

Facility in the use of the English language is essential for graduate or postgraduate studies at the University of Toronto. Only where it can be shown that the language of instruction *and examination* in the undergraduate programme was *uniformly* English will entrance be permitted without an English language test. Acceptable tests are those administered by (*a*) the English Language Institute, University of Michigan and (*b*) TOEFL Educational Testing Service.

Further information about the administration of the Michigan tests can be secured from the local centre of the United States Information Service or, in case of difficulty, from the English Language Institute, University of Michigan, Ann Arbor, Michigan, U.S.A. Information on the TOEFL tests can be obtained from the local centre of the United States Information Service or, in case of difficulty, from the TOEFL Educational Testing Service, Princeton, New Jersey, U.S.A.

REGISTRATION

Students in M.Sc.D. and Ph.D. courses must register at the School of Graduate Studies at the times prescribed by that School. Fees, or first instalments of fees, must be paid before registration. Those who have not registered by September 25 will be charged a late registration penalty of $10 plus $1 for each day's delay, to a maximum of $20. All students must also report at the Faculty Office in the Faculty of Dentistry at the beginning of each session.

Students in diploma courses must register at the Faculty of Dentistry at the times prescribed in this calendar. Fees, or first instalments, must be paid on or before date of registration. The same penalty for late registration applies.

Students in the B.Sc.D. course, and occasional students, must register at the Faculty of Dentistry and must pay their fees in full on or before the date of registration. The same penalty for late registration applies.

Second instalments are due by the opening day of the second term and late penalties will be charged after January 15 (Ph.D. and M.Sc.D.) or January 25 (diploma courses). Cheques should be made payable to the University of Toronto. No student can be registered so long as fees for a previous session remain unpaid.

PARTICIPATION IN LABORATORY TESTING

At various stages of the teaching programme there are occasions when biochemical, physiological or pharmacological observations are made by students on themselves or on fellow-students. These exercises include

some diagnostic or immunization procedures in common use. Unless some valid reason exists, students are expected to participate in such exercises.

If any investigative work involving student participation does not form part of the teaching programme, participation is entirely voluntary.

LIBRARY

The Dental Library contains an excellent collection of modern dental books and periodicals which are available to graduate students on loan, and under certain conditions, to all graduates of the Faculty of Dentistry, University of Toronto. Excellent accommodation for study is available to graduates in the library.

The Dental Library consists of two divisions, a department of the main University Library, and the Harry R. Abbott Memorial Library. The latter was established in memory of the late Dr. Harry R. Abbott.

In addition to the collection in the Dental Library, graduate and post-graduate students are permitted to use the facilities of the main University Library and its other divisions.

OFF-CAMPUS ACCOMMODATION

Housing Service. For the convenience of those students who are not able to find accommodation in the University and College residences, the University maintains a listing of rooming houses, flats, apartments and homes. Information on these rooms may be obtained through the Housing Service office at 49 St. George Street, Toronto 5. Off-campus housing of this nature is not subject to University regulation; however, every effort is taken to make the information on the accommodation as complete as possible and students are encouraged to assist in this effort by reporting on the quality of the accommodation which they have occupied.

Ontario Student Housing Corporation. A modern student housing complex, located near the campus, is owned by the Corporation and is operated by it for the University of Toronto. When fully developed it will offer more than 700 unfurnished apartments, with stoves and refrigerators supplied. There are restaurant and shopping facilities. Occupancy is usually limited to students of the University of Toronto and preference is given to married students. Enquiries should be addressed to the University of Toronto Housing Service, 49 St. George Street, Toronto 5.

Campus Co-operative Residence Incorporated offers residence and apartment accommodation for graduate and undergraduate students. Total occupancy is 300 in residence, half male, half female, and 50 in

apartments. Meals are provided, and non-residents are invited to eat at the Co-op Dining Rooms. The University of Toronto has no official connection with Campus Co-operative Residence, Inc., and inquiries should be addressed direct to Campus Co-operative Residence Inc., 395 Huron Street, Toronto 5, Ontario, telephone 921-3168 (area 416).

Rochdale College operates on a co-operative system and offers student accommodation of varying forms: single and double rooms, suites and apartments. Total accommodation is about 850, male and female, and the building includes a cafeteria. Rochdale College has no official connection with the University of Toronto, and all enquiries should be addressed to Rochdale College Reservations Office, 395 Huron Street, Toronto 5, telephone 921-3168 (area 416).

St. Andrew's — University Day Nursery. Married students with children may be interested in this day nursery, which provides pre-school education and day care for children aged two to five. It was established and is supported by the University of Toronto, the Graduate Students' Union and the Students' Administrative Council. Information may be obtained from the Nursery at St. Andrew's United Church, 117 Bloor Street East (telephone 921-7078) or from the School of Graduate Studies.

RONSON SCHOLARSHIP IN PERIODONTICS

This scholarship, made available through the generosity of Ronson Products of Canada Ltd., is awarded annually to a student entering the first year of the diploma course in Periodontics, on the basis of scholarship and proficiency. Candidates may apply upon seeking admission to the course, and must be domiciled in Canada. All applications should be made, in writing, to the Secretary of the Faculty of Dentistry and must be in his hands by January 31. The value of the scholarship is $2,000.

The first award was made in 1968, to R. Lundy; the winner in 1969 was R. S. Turnbull.

GLENN T. MITTON MEDAL

Presented by the Ontario Association of Public Health Dentists, this medal is awarded annually to the student standing highest in general proficiency in the diploma course in Dental Public Health. The award was established and first presented in the University in Session 1966–67, although the Association had privately given a Mitton medal in 1965–66.

Winners of the Medal have been J. E. Russell, in 1966; R. G. Romcke in 1967; R. L. Ellis in 1968; and A. S. M. Wu in 1969.

PROVINCE OF ONTARIO STUDENT AWARDS PROGRAMME

Awards under this programme will be made available to all Ontario students provided:

(i) they are in full-time attendance at a Canadian university (or other eligible institution).

(ii) they can demonstrate need of financial assistance.

(iii) they are either Canadian citizens or landed immigrants, have resided in Ontario for at least twelve months prior to entering the course, and intend to reside permanently in Canada.

Each applicant's need will be assessed by the Department of University Affairs and awards will be part-loan and part-bursary.

Further information is printed on the application forms which may be obtained from the Faculty Secretary.

GRADUATE COURSES

Graduates in dentistry may apply for admission to courses leading to the degrees Master of Science in Dentistry or Doctor of Philosophy.

Candidates for either degree will undertake major study in one of three broad fields: Oral Biology, Oral Pathology, or Preventive Dentistry.

Combined clinical degree programmes are also available, but those which include a significant clinical component will require at least one additional year.

Those interested should consult in the first instance with the Director of the Division of Postgraduate Dental Education, Faculty of Dentistry. Formal application is made to the School of Graduate Studies, and candidates are accepted under the general regulations of that School. Further details are given in the calendar of the School of Graduate Studies. Applications must be received at the School of Graduate Studies by March 15 each year, and letters of reference are expected.

At the beginning of each academic year, the candidate is required to re-register at the office of the School of Graduate Studies (see page 8) and then confer with the Director of the Division as to the programme of his studies for the year.

FEES

Fees for M.Sc.D. and Ph.D. programmes are the same.

Staff exemptions are available to students registered in Graduate Courses who hold appointments on the staff of the University or of an affiliated institution or who hold appointments on the staff of any hospital supplying clinical facilities to students of the University. The amount of the exemption allowed is dependent on the annual remuneration received which must be not less than $250, excluding payment from research grants or other awards. Application for staff exemption must be made to the Chief Accountant of the University, from whom further particulars are available.

The supplemental examination fee of $10 must be paid by any candidate who is required to repeat an examination.

Academic Fee	$444
Incidental Fee (men)	43
(women)	23

The Incidental Fee includes: Health Service; Students' Administrative Council; Graduate Students' Union; and, for men, Hart House.

If desired, fees may be paid in two instalments of $265 and $225 (men) or $245 and $225 (women).

Re-registration Fee ..... $70 per year.

DOCTOR OF PHILOSOPHY

Candidates are required to pursue, for at least three years of full-time attendance, courses of study in a major subject and two minor subjects. Each candidate must submit a thesis, based on the studies in the major subject, which constitutes a distinct contribution to knowledge in the field.

Full information on Ph.D. programmes and regulations will be found in the Calendar of the School of Graduate Studies.

MASTER OF SCIENCE IN DENTISTRY

A candidate eligible to apply for registration for the degree must either be a graduate of the regular undergraduate course of the Faculty of Dentistry, University of Toronto with at least "B" standing, or possess equivalent qualifications.

Candidates shall be required to spend a minimum of two academic years of study in some primary or clinical laboratory of the University of Toronto. Dental graduates who possess the Bachelor of Science in Dentistry Degree of the University of Toronto or who have completed one of the Postgraduate Diploma courses in the Faculty of Dentistry, University of Toronto, may be granted credit for one year in time toward the Master of Science in Dentistry degree. Such candidates may be permitted to devote, in lieu of whole time for an academic year, an equivalent time extended over a longer period.

The programme for the degree shall include one major and one minor subject, and each candidate will be required to submit a thesis (see page 37) reporting an original research study in his major field.

In each case the subject of the thesis and the major and minor subjects must be approved by the sub-committee of the School of Graduate Studies that administers the regulations for the degree, and before being recommended for the degree each candidate shall pass examinations on each subject and the thesis.

If a candidate has not submitted his thesis within five calendar years after his initial registration for the degree, his candidature will lapse.

POSTGRADUATE COURSES

BACHELOR OF SCIENCE IN DENTISTRY

The degree of Bachelor of Science in Dentistry was established in the Faculty of Dentistry to encourage scholarship and research in those sciences related to the field of dentistry. Courses of a general nature are offered and, in addition, a course with special emphasis in Anaesthesiology.

Enrolment is limited, and applications for part-time studies will not be accepted.

APPLICATION

Candidates desiring to proceed to this degree should consult with the Director of the Division of Postgraduate Dental Education concerning a programme, which must be approved by the Graduate Studies Committee of the Faculty before registering. After approval of the programme candidates should then register at the office of the Faculty of Dentistry.

Admission applications must be submitted before December 1 each year.

REGULATIONS

The regulations governing the degree are as follows:

(*a*) General

1. Candidates for this degree shall be either (*a*) graduates of the Faculty of Dentistry, University of Toronto, or shall possess equivalent qualifications, or (*b*) undergraduates who have successfully completed a minimum of two years of the four-year course of the Faculty of Dentistry, University of Toronto, or who possess equivalent qualifications.

2. The course leading to a degree shall require a minimum of one academic year of study in a basic science or clinical department of the University of Toronto. The course may be taken full-time over one academic year or part-time over not more than three calendar years. If the requirements have not been completed within three years of initial registration, the student's candidature will lapse.

3. A minimum of 200 hours of the required time shall be spent in assigned courses in subjects related to the main field of interest. Not less than three recognized courses shall be taken for the degree.

4. Candidates will submit an essay (see page 23) which will constitute a thorough review of some area related to the major field of interest. The subject for the essay and the credit in time for work done on the essay must be arranged with the Head of the Department concerned.

5. Before being granted the degree the candidate shall successfully pass examinations in each of the subjects included in his programme and shall have the essay approved by the major Department.

(*b*) Anaesthesia as it Applies to Dentistry

1. The course leading to the B.Sc.D. degree in the field of Anaesthesia as it Applies to Dentistry will conform to the general regulation above. It may not be taken on a part-time basis, but must be taken over a period of twelve continuous months. Details of this course will be arranged in collaboration with the Head of the Department of Dental Anaesthesia.

2. The course includes the basic sciences related to General Anaesthesia and their clinical application. The basic sciences are taken in conjunction with medical residents in Anaesthesia in the form of lectures and tutorials. The clinical practice is divided between the Faculty of Dentistry clinics and the operating areas of the Toronto General Hospital. At the Faculty of Dentistry a public general anaesthesia clinic operates five half days per week where approximately two thousand general anaesthetics are administered annually. In addition to these two areas considerable time is devoted to current concepts in drug therapy and the management of the problem dental patient.

FEES

First Year	$300, one instalment
Each Successive Year	$ 60 Re-registration Fee

COURSES IN THE DENTAL SPECIALTIES

Courses are offered by the Faculty leading to a Diploma which may be accepted by the Board of Directors of the Royal College of Dental Surgeons of Ontario as the educational qualifications for specialist certification in the subjects of:

Dental Public Health	Orthodontics
Oral Surgery and	Paedodontics
Anaesthesia	Periodontics

It should be noted that the University of Toronto Diploma does not in itself confer the right of certification as a specialist. In Ontario this is the prerogative of the Royal College of Dental Surgeons of Ontario, to which all questions regarding certification should be addressed.

Students admitted to a diploma course may apply for transfer at the end of their first year to one of the combined degree programmes (see section on Graduate Courses).

APPLICATION

Application for permission to register for the course should be made to the Director, Division of Postgraduate Dental Education, on the prescribed form.

The last date for receiving applications for the course leading to the Diploma in Dental Public Health will be April 1, although it is to the applicant's advantage to apply before December 1. For all other Diploma Courses the final date for receiving applications will be December 1. Only under exceptional circumstances will applications received after the closing date be considered.

Those applicants who have been accepted for the course by the Council of the Faculty of Dentistry will be informed as to the date for registration, which may vary from year to year. They are required, immediately on acceptance, to pay a non-refundable deposit of $50 which will be credited against their fees upon registration.

REGULATIONS

1. A candidate to be eligible for registration in a Diploma Course shall be either a graduate of the regular undergraduate course of the

Faculty of Dentistry, University of Toronto, or shall possess similar qualifications.

2. Candidates are required to write all examinations for each year of the course in one session.

3. Candidates will be required to obtain in their final examinations, a minimum of 70 per cent (B) in the major subject (i.e. the subject of the specialty) and a minimum of 60 per cent (C) in each of the other subjects.

4. Failure to obtain the specified 70 per cent in the major subject will constitute failure of the year, and will necessitate the repetition of the entire year and all examinations.

5. Failure to obtain 60 per cent in one or more of the subjects exclusive of the major field, will necessitate the re-writing of examinations in such subjects at one examination session. Failure to obtain 60 per cent in any one subject in the supplemental examination will constitute a failure of the year, and will necessitate the repetition of the entire year and all examinations.

6. This marking system came into effect in 1964–65. Prior to that session, students were required to obtain 66 per cent in the major subject, 50 per cent in each minor, and an overall average of 57 per cent.

7. Academic instruction in each of the Diploma courses extends full-time over the period indicated below for each of the courses:

(*a*) Dental Public Health—At least one year. An additional period of field experience in Dental Public Health will be arranged.

(*b*) Oral Surgery and Anaesthesia—A minimum period of three years, the first ten months of which shall be mainly a study of basic sciences applicable to the specialty of Oral Surgery and a course in Orientation to Hospital Practice. The remaining time shall be spent in a residency in the Toronto General Hospital or in other hospitals acceptable to Faculty Council.

(*c*) Paedodontics, Periodontics, Orthodontics—two years minimum.

8. If the course requirements are not completed within five years of initial registration, the student's candidature will lapse.

CLINICAL INSTRUCTION

Clinical instruction will include observation and practice under supervision in a hospital acceptable to the Faculty of Dentistry and in the clinic of the Faculty of Dentistry.

FEES

	Each Academic Year	$435
or, if paid by instalments,	First instalment	$218
	Second instalment	$220

CONTINUING EDUCATION

Each year the Faculty offers a series of limited-enrolment courses in various clinical and basic sciences related to dentistry. Instruction usually extends over a period of from two to five days. Topics for presentation vary each year, and announcement is made through a brochure which is mailed to all dentists in the Province of Ontario. Additional copies are available on request from the Director, Division of Postgraduate Dental Education, Faculty of Dentistry.

The courses are held at intervals through the period October to May. A typical year's programme would include eight or ten courses in such subjects as Crown and Bridge, Endodontics, Occlusion, Operative Dentistry, Orthodontics, Periodontics, Practice Administration and Oral Surgery. Most are open to general practitioners although a few are restricted to specialists.

The courses are offered only as a means of continuing education and do not carry any certificate or diploma.

COURSES

CURRICULA

Candidates for the specialty diplomas and for the B.Sc.D. (Anaesthesiology) are required to pass examinations as follows:

1. Dental Public Health

Dental Public Health Seminars
Dental Statistics and Epidemiology
Epidemiology 1
Health Education 1
Preventive Dentistry
Public Health Administration 1
Public Health Administration 2 or 3
Public Health Nutrition
Reading Course in Dental Public Health

Plus three options from among the following:

Computers in the Health Sciences
Data Processing for the Health Sciences
Epidemiology 3
Introduction to Public Health Law
Medical Care Administration 1, 2, 3, or 4
Medical Statistics 1
Medical Statistics 2
Molecular Biology and Genetics
Oral Biology 1
Physiological Hygiene
Public Administration
Radiological Health
Sociology
Statistics 1008
Vital Statistics 1
Other approved subjects or assignment (see page 26)

2. Oral Surgery and Anaesthesia*

Anaesthesia Tutorials
Anatomy
Bacteriology
Hospital Orientation
Medicine
Oral Surgery and Anaesthesia
Pathology, General
Pathology, Oral
Pathology, Oral Surgical
Pharmacology
Physiology 2
Radiology

3. Orthodontics*

Anatomy
Congenital Anomalies
Dental Statistics and Epidemiology

Development of the Dentition
Essay
Facial Morphology and Growth
Molecular Biology and Genetics
Oral Biology 1
Orthodontics 2, 3 and 4
Physiology, Oral, parts 1 and 2
Preventive Dentistry, parts a and b
Radiology

During the second year of this diploma programme a student, on the recommendation of the department chairman, may take one extra course selected from the calendar of the School of Graduate Studies. The course will not count as credit toward the diploma.

4. Paedodontics*

Anatomy
Bacteriology
Congenital Anomalies
Dental Statistics and Epidemiology
Development of the Dentition
Essay
Molecular Biology and Genetics
Oral Biology 1
Orthodontics 5
Paediatrics
Paedodontics 1
Paedodontics 2
Pathology, General
Pathology, Oral
Physiology, Oral, part 1
Preventive Dentistry, part a
Radiology

5. Periodontics*

Anatomy
Bacteriology
Dental Statistics and Epidemiology
Essay
Medicine
Molecular Biology and Genetics
Oral Biology 1
Pathology, General
Pathology, Oral
Periodontics
Physiology, Oral, part 1
Preventive Dentistry, part c
Radiology

6. B.Sc.D. (Anaesthesiology)

Anaesthesia Tutorials
Anatomy for Anaesthetists
Essay
General Anaesthesia for Dentistry

*Histology 1 is available to students in these programmes by arrangement with the Head of the Department of Histology.

DESCRIPTION OF COURSES

Anaesthesia Tutorials

Tutorials are conducted on a postgraduate level by members of the Anaesthesia Department, Faculty of Medicine. The tutorials cover physiology and other basic sciences as they relate to the practice of anaesthesia.

For B.Sc.D. (Anaesthesiology) students, the course is divided into three sections with a separate examination in each: Pharmacology, Physiology of respiration, and Physiology of circulation.

Faculty of Medicine

Anatomy

Anatomy for Oral Surgeons. Facilities for study of dissected specimens, planning and carrying out of surgical dissections and discussions with a member of the staff are provided by the Anatomy Department.

Anatomy Seminars for Postgraduate Dentists. In a series of 15 two-hour seminars, the anatomy of selected regions is reviewed using dissected specimens and drawings. Discussion of relevant clinical problems leads to understanding based on a knowledge of structure. The range of variation among individuals, and in individuals as they change from birth until death, is stressed.

Faculty of Medicine

Anatomy 3

A seminar course in human evolution, growth and constitution.

*S.G.S. No. 1004 Faculty of Medicine

Anatomy for Anaesthetists

A course for postgraduate students. Tuition is mainly by demonstration of specially prepared dissections. (45 hours throughout the year.)

Faculty of Medicine

Bacteriology

Oral Bacteriology:

The Bacteriology of mucous membranes in general and the pathogenic possibilities of the bacterial flora of the oral cavity are presented.

*S.G.S. No. 1004X Associate Professor E. M. Madlener

**The numbers quoted throughout this section are course numbers allocated by the School of Graduate Studies (S.G.S.) or by the School of Hygiene (S.H.).*

Congenital Anomalies

The embryology of the human head and pathological development of the craniofacial complex. Experience in clinical orthodontic management of congenital anomalies such as cleft palate is provided through the facilities of the Hospital for Sick Children. This course of instruction extends over one and one half years. (90 hours.)

Associate Professor R. B. Ross and
Staff of The Hospital for Sick Children

Dental Public Health

Dental Public Health Seminars:

Current dental health problems and their solution as proposed both by the profession and others outside the profession, are reviewed. The attitude of the public and the profession to various aspects of dental health are considered. Reading assignments are given on selected articles which later are subjected to critical examination. General principles in dental public health programme planning and administration are discussed. (75 hours throughout the year.)

S.G.S. No. 1006 Professor A. M. Hunt and
Associate Professor D. W. Lewis

Reading Course in Dental Public Health:

A prescribed reading course related to special dental public health topics as recommended by the staff will be completed in the Fall term. During the second term an Essay will be prepared, based on the assigned reading subject area. Staff will be available for consultation.

S.G.S. No. 1030 Professor A. M. Hunt and
Associate Professor D. W. Lewis

Development of the Dentition

A seminar and guided reading course on the development of the dentition and occlusion. (40 hours.)

Associate Professor R. O. Fisk

Essay

The essay shall conform to the same format and the same literary standards as those required for the thesis (which see). The essay shall be approximately 3,000 words in length, and the subject shall be related to the main field of interest of the student. It will consist of an analysis

of a dental problem, covering fully its importance, the review of related literature, the possibilities and methods for objective investigation, and the implications of various hypothetical solutions. It may or may not involve the gathering or processing of new data, according to the discretion of the Department and the interest of the student. The essay may include re-analysis of data from the literature.

Students will be told the deadline for submission of their essays by their department chairman.

Two copies of the essay must be presented to the Faculty library.

Facial Morphology and Growth

This is a guided reading and seminar course. Extensive independent reading, essays and term papers are assigned. The course is presented over two complete years.

(i) Basic principles in human growth and development. Recent advances in physical anthropology, human genetics and embryology with particular reference to the effects of environmental impact and heredity are covered.

(ii) The evolution, embryology and comparative anatomy of the vertebrate skull.

(iii) Craniofacial growth, development and morphology.
(a) Statics; (b) Dynamics.

(140 hours) Professor D. G. Woodside and staff

General Anaesthesia for Dentistry

A series of 12 lectures on general anaesthesia is given in the second term. These lectures are to familiarize the students with theories, techniques, armamentarium and basic fundamentals of general anaesthesia as applied to Dentistry.

Professor R. S. Locke and staff

Health Education 1

A lecture and case study course providing a general introduction to health education. The topics discussed include the social and psychological foundations and the nature of the educational approach which influences learning. Community educational programmes and group discussion techniques are presented. The international and national health education programmes and those of the voluntary agencies are discussed. The audio-visual aids and mass media are illustrated. (30 hours.)

S.G.S. No. 1405, S.H. No. 1405 School of Hygiene

Histology 1

A review in general histology for postgraduate students. (10 hours.) This course is available by arrangement, but it is not for credit, and grades will not be given.

Professor A. R. Ten Cate

Histology 2

A laboratory and seminar course in histology. Students are taught a variety of histological techniques including histo-chemistry and auto-radiography. The application of these techniques to cell and tissue biology is considered and special emphasis is given to the detailed study of dental histology. (60 hours.)

S.G.S. No. 1005 Professor A. R. Ten Cate

Hospital Orientation

Hospital orientation is offered toward the end of the first year preparatory to residency at the Toronto General Hospital. The student acquires at this stage knowledge of the organizational structure of the hospital, duties and responsibilities to patients, and his relationship to the staff. Department of Oral Surgery

Introduction to Public Health Law

The course presupposes no knowledge of law. The first part of the course is designed to acquaint the student with basic legal concepts and with the materials of legal research. The remainder of the course deals with selected aspects of the law relating to public health, including medical care. Emphasis, throughout the course, is on the functioning of the law as an instrument of social policy. (60 hours.)

S.G.S. No. 1410, S.H. No. 1410 School of Hygiene

Medical Care Administration 1 (Medical Care Concepts, Resources, Needs, and Patterns of Organization)

Lectures and seminars exploring in depth the principles and processes of medical care organization and administration and, with the primary focus on Canada, studying health care resources; family needs, receipt of services, and expenditures; and changing patterns of medical practice and organization. The subject will require extensive reading, involve preparation of reviews and assignments, and include field visits. (60 hours, first term.)

S.G.S. No. 1411, S.H. No. 1411 School of Hygiene

Medical Care Administration 2 (Medical Care Programs, Financing, Planning Evaluation, and Issues)

Lectures and seminars studying in depth medical care plans and proposals in Canada, governmental health care expenditures and financing, the control and evaluation of quality of care, health care planning, problems and issues in the administration of medical care, and social policy and medical care. Field visits to operating medical care organizations will feature study of administrative practices. The subject will require extensive reading and involve preparation of reviews and assignments. Medical Care Administration 1 is a prerequisite. (60 hours, second term.)

S.G.S. No. 1412, S.H. No. 1412 School of Hygiene

Medical Care Administration 3 (National Patterns of Health Services Organization)

Lectures and seminars exploring in depth the history, development, and organization of the various health service systems in the world, such as those in Canada, the United States, the United Kingdom, Scandinavia, the U.S.S.R., Australasia, and selected developing nations. Emphasis will be placed on the social-cultural dynamics as they affect the planning of health services. The subject will require considerable searching of the literature and preparation of reviews and assignments. (60 hours, both terms.)

S.G.S. No. 1413, S.H. No. 1413 School of Hygiene

Medical Care Administration 4 (Special Topics)

A field of study to be selected in conjunction with the staff and to be pursued by supervised reading, written assignments, and appropriate field studies.

S.G.S. No. 1414, S.H. No. 1414 School of Hygiene

Medicine

A series of theatre clinics in medicine is given at the Toronto General Hospital. Patients are presented in order to demonstrate the typical lesions of the disease under consideration. The principles and practices used in diagnosis and treatment are considered and the oral manifestations of systemic disease in patients are demonstrated. (30 hours.)

Faculty of Medicine

Optional Subjects and Assignments

As described in the section on the curricula of the D.P.H., D.D.P.H., D.V.P.H., and Dip.Nutrit. courses in the School of Hygiene Calendar,

students may select as an option any approved subject described in that Calendar or given elsewhere in the University, provided there is free time available in the time-table. Among the approved subjects offered by the School of Hygiene are:

Medical Statistics 3, S.H. No. 1020,
Special Topics in Child Health, S.H. No. 1420,
Special Topics in International Health, S.H. No. 1421,
Special Programmes in Health Administration.

Students may also prepare an essay, scientific report or review article on some subject of interest, provided the administrative staff of the School and the staff member chiefly concerned agree. It will not usually be possible to arrange for such an assignment to be done in the laboratory.

Oral Biology

Oral Biology 1.

This course integrates basic science knowledge related to major topics in Oral Biology. These include formation and repair of connective tissue (including bone); pre- and post-natal craniofacial development; formation and structure of the dental tissues; metabolism of dental hard tissues; physiology of pulp and periodontal tissues; and structure and metabolism of salivary glands and dental plaque.

S.G.S. No. 1001 Associate Professor R. C. Burgess and Associates

Molecular Biology and Genetics. This course begins with a review of recent advances in cell biology, emphasizing those which demonstrate the molecular basis of genetics. The second part of the course is concerned chiefly with topics in human genetics including cytogenetics, patterns of transmission of hereditary traits, gene action, and population genetics. (30 hours.) Dr. Margaret W. Thompson and Associates

Biology of Connective Tissues.

The course will deal with the structure of soft and mineralized connective tissues, with their synthesis, maintenance and removal, and with the mechanisms whereby these are controlled. While some of the material will be covered in lectures, most of it will be discussed in seminars based on assigned reading. (30 hours.) Professor A. H. Melcher

Oral Microbiology and Immunology

This course will emphasize the basic concepts of Immunology and Microbiology including the chemotherapeutic aspects. Particular attention will be given to research related to the oral environment. The material in the course will cover mainly the recent literature and research. (30 hours.)

S.G.S. No. 1020X Associate Professor M. Goldner

Oral Surgery and Anaesthesia

The course will include the clinical application of the principles and facts learned in the basic sciences to give the students a broad training in diagnosis of oral disease and the relationship of oral sepsis to the general system.

Operative procedures, haematology, shock, resuscitation, the surgical treatment of facial fractures and the surgical correction of developmental and congenital jaw deformities will be studied. Special attention will be given to local and general anaesthesia.

Clinical practice will be provided through internships and residencies at the Toronto General Hospital, and in other hospitals acceptable to Faculty Council. Students will also be required to spend scheduled periods in the Department of Oral Surgery and Anaesthesia at the Faculty of Dentistry.

Professor P. T. Smylski and staff

Orthodontics 2

Advanced Orthodontic Diagnosis and Treatment Planning. Various methods of appraising dento-facial deformities and growth trends are discussed. The course is limited to orthodontic students. (200 hours.)

Assistant Professor F. Popovich and staff

Orthodontics 3

Biomechanics Technique, Practice Administration, and Clinical Practice. An analysis of all standard orthodontic appliances discussing the theory, indications and contraindications, is carried out. Extensive technique and seminar courses in the techniques are presented. This instruction extends over two years. A multi-philosophy approach to the various orthodontic mechanisms is stressed. (1000 hours.)

Assistant Professors H. Halderson and A. Posen
and Department staff

Orthodontics 4

Interceptive Orthodontics. In addition to the formal instruction, students are required to teach from time to time in the undergraduate clinic, in order to familiarize themselves with the field of interceptive orthodontics. They are expected to prepare basic diagnostic seminars, technical instruction and clinical instruction. They also assume responsibility for the clinical instruction of dental hygiene students. (220 hours.)

Staff of the department

ORTHODONTICS 5

Clinical Orthodontics for Paedodontic Post-Graduate Students. This course is presented over two years. (230 hours.)

Assistant Professor R. O. Fisk and Dr. R. Pileski

PAEDIATRICS

This is a series of seminars given by the Department of Paediatrics at the Hospital for Sick Children. A study of growth and development, it includes prenatal care; infant feeding; factors influencing growth and development; infections and their effect on growth and development; chest infections in relation to growth and development; coeliac disease and normal and abnormal conditions in infancy and childhood; glandular and endocrine control of growth; diseases secondary to endocrine disturbances; bone dyscrasias and the dental application of all these factors. The effect of nutrition on growth and development will also be discussed.

Faculty of Medicine

PAEDODONTICS

1. *Seminar Programme*

(*a*) Applied Paedodontics
This is a series of weekly seminars which is concerned with all phases of the practice of dentistry for children and is conducted throughout the second year of the course by the Paedodontic Department. Weekly reading assignments and periodic seminar presentations are assigned.

(*b*) Integration of Paedodontics and Other Dental Specialties
This series of seminars, which is specifically related to clinical paedodontics, is given by members of other departments and includes such subjects as Practice Management, Endodontics, Oral Surgery, Periodontics and Dental Materials.

(*c*) Hospital Paedodontics
Instruction is given at the Hospital for Sick Children consisting of Dental Rounds, Paedodontic Pharmacology, Hospital Dentistry and Paediatrics.

(*d*) Child Development
This programme which is developed over two years involves instruction from various disciplines within the University and attempts to present a comprehensive picture of the normal and abnormal living processes exhibited by the child during the various phases of growth and development.

This course consists of facial growth and development, cephalometry, emotional growth and development, child psychology, abnormal maxillofacial development, and a series of lectures and seminars conducted at the Hospital for Sick Children by the Department of Paediatrics.

2. *Clinical Programme*

Most of these assignments are carried out during the second year of the course. Clinical problems of examination, diagnosis and treatment of the child patient are supervised in the Graduate Clinic at the University of Toronto and in the Dental Department at the Hospital for Sick Children. Additional clinical assignments will be given at the Ontario Crippled Children Centre.

Students will participate in some maxillofacial clinics at the Hospital and receive experience in managing sick or handicapped patients and carrying out total dental procedures on handicapped patients under general anaesthetic.

Professor Keith W. Davey and staff

PATHOLOGY, GENERAL

A lecture and laboratory course for medical students. (93 hours.)

S.G.S. No. 1 — Department of Pathology, Faculty of Medicine

PATHOLOGY, ORAL

This is a weekly seminar course covering the pathology of caries, pulpitis, apical infections and their possible mode of spread; specific infections; cysts; polyps; benign and malignant tumours of the mouth, jaws and salivary glands; mucosal abnormalities, fibro-osseous lesions; endocrinopathies; and various congenital abnormalities.

S.G.S. No. 1002X — Professor J. H. P. Main

PATHOLOGY, ORAL SURGICAL

This is an advanced course consisting of weekly seminars devoted to the correlation of clinical and laboratory aspects of diseases of especial interest to the oral surgeon. The course continues throughout the three years of the oral surgery diploma programme. Restricted attendance. (180 hours.)

Professor H. A. Hunter

PERIODONTICS

The course will consist of lectures, seminars, demonstrations, and clinical practice. Diagnosis and treatment planning will be given special consideration.

A classification of gingival and periodontal diseases based on histo-

pathological studies will be considered. The relation of local and general metabolic factors to diseases of the tooth and periodontium will be taught. Periodontal therapeutics will be practiced.

Professor C. H. M. Williams and staff

PHARMACOLOGY

A course of lectures in applied Pharmacology. The use of drugs, the treatment of patients receiving medical care, emergency problems, and preventive therapy are discussed. (12 hours.)

Dr. C. Reynolds

PHYSIOLOGICAL HYGIENE

A survey course covering, in lectures, demonstrations, and laboratory periods, the physiological reactions of man to his environment. The following topics will be covered: physiological reactions to the physical environment—heat, cold, humidity, light, illumination, ionizing radiation, sound, atmospheric pressure, muscular work and environmental stress; physiological reactions to the chemical environment—air pollution, respiratory irritants, asphyxiants, anaesthetics, systemic poisons, dusts, aerosols, and carcinogens; principles of control of the occupational environment—morbidity and mortality in relation to occupation, occupational health services. (45 hours throughout the year.)

S.G.S. No. 1301, S.H. No. 1301 School of Hygiene

PHYSIOLOGY 2

A lecture course in human physiology, for medical students. (3 hours per week.)

Students in the Faculty of Dentistry take only that part of the course given in first medical year.

S.G.S. No. 2 Department of Physiology, Faculty of Medicine

PHYSIOLOGY, ORAL—PART 1

A seminar course for graduate students on the sensory and motor functions of the mouth (2 hours per week; second term). Topics studied include receptor physiology; psychophysics and sensory physiology of the tooth, periodontal membrane, oral mucous membrane and temporomandibular joint; pain; gustation and perioral voluntary motor activity, including speech. This course is prerequisite for Physiology, Oral, Part 2.

S.G.S. No. 1060X Dr. A. T. Storey

PHYSIOLOGY, ORAL—PART 2

Oral Physiology for Orthodontists. A guided reading and seminar course for orthodontic students on oral reflexes, habits and conditioning

and regulation of growth. (2 hours per week; first term.) Topics studied include postural, centric and occlusal reflexes, swallowing, mastication, physiology of vertical dimension, physiology of lips and tongue, regulation of oral reflexes, digit and tongue habits and the determinants of growth of the face and jaws in the categories of genetics and environment, stimulation or inhibition and size and functional demand. The clinical application of these principles is discussed. (90 hours.) Prerequisite: Physiology, Oral, Part 1.

S.G.S. No. 1061X Associate Professor A. T. Storey and staff

PREVENTIVE DENTISTRY

This course will consist of seminars comprising a detailed discussion of the factors involved in the etiology and prevention of the three major public health problems related to the oral cavity. The course will be organized in three sections as follows:

(*a*) Etiology and Prevention of Dental Caries
(*b*) Etiology and Prevention of Periodontal Disease
(*c*) Etiology and Prevention of Malocclusion

(45 hours.)

S.G.S. No. 1003 Professor J. Kreutzer and associates

PUBLIC ADMINISTRATION

This course will be offered by the staff of the Department of Political Economy. The following subjects will be covered:

(*a*) *Political and Constitutional Context of Administration*

The state; organs and functions of government; democratic vs. authoritarian forms; constitutions and constitutional principles; parliamentary government; law; expansion of state activities; concepts relating to the role of the state; types of executive agency; delegation of legislative powers (regulations, etc.); administrative adjudication; control over delegated legislative and judicial powers by courts; interest groups; methods of government investigation and consultation; inter-governmental problems.

S.H. No. 2049

(*b*) *Administration*

The study of administration; human behaviour in organizations; the theory of organization; authority and status; leadership and the qualities of the administrator; communications; decision-making personnel; planning in organizations; bringing about change; methods of enforcing objectives; efficiency. (50 hours throughout the year.)

Department of Political Economy

PUBLIC HEALTH ADMINISTRATION 1 (*Principles*)

A lecture-discussion-seminar course on principles and issues in the provision of community health services and social medicine. This course will be global in view and suitable for students from developing countries as well as from North America and Europe. Topics covered include: general evolution and philosophy of community health and social medicine as seen in public health and preventive medicine, the hospital, services for specific groups, and local, regional and international health services; outline of world-wide health service patterns, using selected examples; general factors including cultural, economic, social, political, scientific, demographic, and others influencing the evolution of health services; basic elements of the administration of health services, including planning, operation, evaluation, quality controls, distribution and quantity of services, personnel, and cost of health. Students will be expected to do selected reading and to be prepared to participate actively in the seminar-discussions. (60 hours in first term.)

S.G.S. No. 1401, S.H. No. 1401 School of Hygiene

PUBLIC HEALTH ADMINISTRATION 2 (PUBLIC HEALTH PRACTICE, MEDICAL CARE AND SOCIAL WELFARE PROGRAMMES IN CANADA)

A lecture-discussion-seminar course on:

(*a*) The historical evolution of public health services in Canada and on current Canadian public health patterns at the local, provincial, and dominion level, including reference to practical problems and issues of planning, administration, financing, personnel, evaluation, and research, as well as administrative aspects of certain programmes;

(*b*) The historical development of medical care programmes in Canada, medical care patterns and administration of programmes, the Dominion-Provincial hospital insurance and diagnostic services programme, medical services plans, national health grants, and the costs and financing of health care;

(*c*) Principles of hospital administration in Canada;

(*d*) The nature and development of social welfare services in Canada, specific local, provincial, and dominion programmes, and voluntary social services.

Students will be expected to do selected reading and to be prepared to participate actively in the class sessions. Each student as part of a small group will be assigned a topic to prepare and present for discussion by the class as a whole. (60 hours.)

S.G.S. No. 1402, S.H. No. 1402 School of Hygiene

PUBLIC HEALTH ADMINISTRATION 3 (PUBLIC HEALTH PRACTICE AND GENERAL HEALTH SERVICE PATTERNS FOR INTERNATIONAL STUDENTS)

A lecture-discussion-seminar course on:

(*a*) General public health, medical care, and social welfare patterns in Canada;

(*b*) International public health organization and assistance;

(*c*) Issues and problems in providing health services in developing countries, including planning, administration (including hospital administration principles), evaluation, quality control, personnel, and research.

(*d*) Administrative aspects of specific programmes, including sanitation, maternal and child health, nutrition, communicable disease control, health education, vector control, mass campaigns, domiciliary methods of care, population and mental health.

S.G.S. No. 1403, S.H. No. 1403 School of Hygiene

PUBLIC HEALTH NUTRITION

A survey course covering, by means of lectures, the field of nutrition and its application to public health. The course will cover the following subjects: metabolism and function of fat, protein, carbohydrate, nutrient elements and vitamins; abnormalities of metabolism, effects of nutrient deficiencies; nutrient interrelationships; nutrient requirements and food recommendations; special recommendations in regard to pregnancy and lactation, infant feeding, geriatric nutrition, therapeutic diets and the prevention of dental disease; appraisal of nutritional status by dietary, biochemical and clinical methods; social and economic aspects of malnutrition, interrelationship between nutrition and infection; methods of improving nutritional status; special topics such as heart disease and the control (dietary) of serum lipid levels, the aetiology and treatment of obesity, protein-calorie malnutrition (kwashiorkor), scurvy, rickets. (45 hours throughout the year.)

S.G.S. No. 1201, S.H. No. 1201 School of Hygiene

RADIOLOGICAL HEALTH

A lecture and laboratory course designed to introduce graduates to the problems of ionizing radiation in relation to public health and preventive medicine. Emphasis will be placed on the hazards to man of the major sources of ionizing radiation, X-ray machines, radioactive isotopes, nuclear reactors, and nuclear weapons; and on the principles of protection against such hazards. The laboratory course is intended to acquaint the student with the basic principles of instrumentation for the detection and measurement of ionizing radiation. (60 hours.)

S.G.S. No. 1306, S.H. No. 1306 School of Hygiene

RADIOLOGY

A series of lectures is given on radiographic interpretation, wherein the radiographic appearance of the normal tissues is studied and the variations of the normal are stressed. Consideration is given to the pathological conditions. Seminar periods are organized where radiographic interpretation is discussed among a small group of diploma course candidates by the lecturer in radiology. (30 hours.)
S.G.S. No. 1007X

An advanced course in Dental and Oral Radiology is conducted by the department in conjunction with other divisions of the University.

Professor H. G. Poyton

SOCIOLOGY

This optional course will consider the role of sociology, and sociological research. A review and critical examination of basic sociological concepts which will include: role, status, social norm, primary group, socialization, culture, social stratification, ecology, associations, ethnic groups. The role of ecological and social change in relation to social structure will be discussed. An analysis of the following topics will be made: manifest and latent functions; unanticipated consequences; pattern of cultural goals and institutional norms; bureaucratic structures; patterns of influence and self fulfilling prophecy. (30 hours, second term.)
S.G.S. No. 1011

Department of Sociology, through School of Hygiene

STATISTICS

Computers in the Health Sciences:

This course describes the many applications of electronic computers in the field of hospital procedures and medicine. It comprises an introduction to the methodology and terminology of automatic data processing, and a systematic approach to the problem of conducting meaningful analyses of large volumes of data. (30 hours.)

School of Hygiene

Data Processing for the Health Sciences:

This course prepares suitable candidates for the mechanical handling of data. 60 hours throughout the year.
S.G.S. No. 1010

School of Hygiene

Dental Statistics and Epidemiology:

The course is designed to provide dental graduates with the basic understanding of statistical methods necessary for literature interpretation

and data analysis. The summary of quantitative and qualitative data, measurement error, normal curve principles, student's "t" and the chi-square tests of significance are covered. Data processing methods, correlation and regression are introduced. The epidemiological method and the use of this method to describe dental caries, periodontal disease, oral cancer and malocclusion will be considered. (30 hours, both terms.)
S.G.S. No. 1040X Associate Professor D. W. Lewis and staff

Epidemiology 1:

A lecture and seminar course providing a general introduction to epidemiology, suitable for graduates with a wide knowledge of the health sciences, covering the following topics: historical introduction, the epidemiologic method; reservoirs, carriers, vehicles and vectors; host resistance; the herd and disease; the family and disease; airborne infections; arthropod-borne infections; contact diseases; zoonoses. In addition, a series of exercises illustrating specific disease outbreaks and certain noninfectious conditions will be assigned. (60 hours throughout the year.)
S.G.S. No. 1001, S.H. No. 1001 School of Hygiene

Epidemiology 3:

This course will be a seminar and guided reading course in fields of particular interest to the student, such as chronic disease, geriatrics, cancer, mental health. Epidemiology 1, Medical Statistics, and Vital Statistics 1 will be required for students taking this course. (60 hours.)
S.G.S. No. 1002, S.H. No. 1003 School of Hygiene

Medical Statistics 1:

This course for physicians, dentists, veterinarians and others with adequate preparation in the health sciences, is presented in lectures and exercises. Part (a) of the course covers classification and tabulation, frequency distributions and centring constants, the significance of differences in means and the "t" test for small samples. (30 hours in the first term.) The continuation of the course, part (b), covers elementary sampling and probability, the binomial, normal and Poisson distributions, the chi-square test and correlation. (30 hours in the second term.)
S.G.S. No. 1004, S.H. No. 1004 School of Hygiene

Medical Statistics 2:

Sampling techniques and design of records for surveys. Planning of public health and dental surveys. (30 hours in second term.)
S.H. No. 1011 School of Hygiene

Statistics 1008:

A more advanced lecture and seminar course in which basic statistical methods are covered in greater detail. Analysis of variance, analysis of clinical trials, data processing and principles of experimental design are introduced. References from medical and dental research literature are used extensively. The class will be limited to those with special interests such as analysis of research data and dental clinical trials. (60 hours, both terms.)

S.G.S. No. 1008 Associate Professor D. W. Lewis and staff

Vital Statistics 1:

This course covers the registration of births, deaths, and other vital records, and their interpretation, as well as the preparation and presentation of statistical material. The subject matter includes the following: statistics in public health and necessary basic data; organization of statistics in a health department and statistical classification of health data; the processing of statistical information and the presentation of findings; the population census and analysis of demographic data; vital statistics, births, deaths, fertility and death rates in relation to natural increase; maternal, infant, and perinatal mortality; general mortality; notifiable diseases, hospital and morbidity statistics. (30 hours in lectures and exercises in the first term.) This course together with Vital Statistics 2 comprises Course

S.G.S. No. 1003 or S.H. No. 1003 School of Hygiene

THESIS

The thesis shall conform to the following requirements:

(*a*) It shall be neatly typewritten, double spaced, on paper 8½″ wide by 11″ long, and a margin of 1½″ shall be allowed on the left hand side of each sheet, with sufficient margin for trimming on the right hand side.

(*b*) It shall have a table of contents immediately following the title page, and may have a list of illustrations following the contents. It shall have also a bibliography following the subject matter.

(*c*) The pages shall be numbered consecutively in the upper right hand corner.

(*d*) All statements from published sources shall be properly acknowledged by a reference containing the name of the author and the page of the work or volume quoted. These references shall be indicated by means of a number in the text and a corresponding number in a list of references at the end of the thesis.

(*e*) Four unbound copies of the completed thesis, later to be bound by the University of Toronto Press at the candidate's expense, shall be submitted to the Director, Division of Postgraduate Dental Education, at least two weeks before the date set for oral examination.

(*f*) Three bound copies of the thesis become the property of the Faculty, two to be lodged in the Faculty Library and the other for the department chairman.

In marking the thesis, credit will be given for the literary style, and the completeness of the list of references, as well as for the treatment of the subject.

GRADUATES

ADMITTED TO THE PH.D. DEGREE

1920, H. K. Box; 1940, F. M. Lott; 1941, R. G. Agnew.

ADMITTED TO THE M.Sc.D. DEGREE

1934, R. G. Agnew; 1936, A. W. Lindsay, F. M. Lott; 1941, T. N. Scott; 1942, R. G. Ellis, M. S. M. Ginwalla; 1946, R. J. Godfrey; 1948, R. J. S. Tickle; 1949, W. Liu; 1950, C. H. Moses; 1951, R. M. Grainger; 1952, G. P. Copeland, L. Funt, D. P. Hult, A. Jarvis, G. E. Sayers, G. C. Swan; 1953, R. D. Harryett, B. Hemrend, M. A. Matthews, D. J. E. Mitchell, C. B. Morrow, F. Popovich; 1954, A. A. Antoni, E. B. Cook, H. A. Hunter, D. H. Jenkins, H. W. Shanks, G. W. Street, M. Yasny; 1955, R. M. Perry, J. G. Mitchell, B. J. Levin, M. M. Mehta, W. J. Linghorne; 1956, R. Boyko, J. A. Janzen, M. C. Johnston, R. L. Landsberg, E. M. Madlener, C. Reynolds, T. E. Spracklin, D. G. Woodside; 1957, D. N. Allen, D. L. Anderson, A. M. Hunt, J. E. C. McGowan, W. G. McIntosh, T. M. Udani; 1960, E. E. Johns; 1961, A. Demircioglu, R. B. Ross; 1962, M. G. Badner, B. T. Coupe, K. W. Davey; 1963, S. Adu-Aryee; 1964, N. Cernavskis; 1965, A. Bennick, R. D. Haselton, A. Feldman, D. W. Lewis, K. N. Munro, A. B. Ramos, E. R. Vizcarra; 1966, H. R. Bergman, R. F. Delia; 1967, C. A. Botchway, D. V. Chong, J. C. Duncan, N. Levine, B. Liebgott, C. W. B. McPhail, M. Paszti, G. W. Thompson; 1968, L. D. Catena, G. E. Longhurst; 1969, E. Hisaki, E. Luks, W. J. Sinclair, J. J. N. Wright.

ADMITTED TO THE B.Sc.D. DEGREE

1928, E. M. Fisher, A. W. Lindsay, V. M. Lloyd, H. J. Manchester, C. H. M. Williams; 1929, W. H. Godsoe, A. B. Haverstock, T. E. Hayhurst, A. C. R. McLeod, F. H. Wirth; 1930, E. M. Box, R. L. Currie, R. G. Ellis, F. M. Lott, G. N. Murphy, T. N. Scott; 1931, G. A. Buchanan, H. M. Corlett, L. Davis, W. P. Devins, W. G. Joynt, H. M. Robb; 1932, E. M. Dutton, J. H. Russell, S. Simon; 1933, F. J. H. Barr, L. J. Côté, J. Kreutzer, J. G. Perkin; 1934, D. G. Johnstone, H. J. Mullett, D. M. Tanner; 1935, R. L. Twible; 1936, H. A. Cominsky; 1937, G. B. Shillington; 1938, D. P. Sutton, T. C. Whang; 1939, M. N. Rockman; 1942, H. S. Austin, J. Passalis; 1943, A. Reny, R. J. Godfrey; 1944, P. W. Arkle; 1946, S. L. Honey, R. J. S. Tickle; 1947, N. H. Cheo, C. H. Moses; 1948, W. Liu, W. Hsu; 1949, R. A. Hugill, A. B. Hord, D. G. Watt; 1950, R. T. Lo; 1951, J. R. Fletcher, E. J. Doran; 1952, E. E. Johns; 1953, E. P. Downton; 1955, H. A. Thompson, J. A. Jansen;

1956, T. M. Udani, I. B. Wilson; 1958, J. Theilade; 1962, S. Adu-Aryee, N. Cernavskis, W. R. Dover, T. Harinasut, R. Mulrooney; 1963, S. I. Young; 1964, A. B. Ramos, F. P. R. Smith; 1965, J. M. Phillips, B. G. Ellis; 1966, J. F. McDowell, C. S. Munro; 1967, R. R. Schiewe, J. L. Storms; 1968, J. W. J. Cairns, N. Tulananda; 1969, E. Friedberg, B. Glazer, J. F. Pepper.

AWARDED THE DIPLOMA IN DENTAL ORAL SURGERY AND ANAESTHESIA

1946, A. Gardiner, A. E. Hobden, D. H. MacDonald; 1947, P. T. Smylski, J. F. Methven; 1952, A. A. Stewart, E. G. Dore; 1953, R. W. Marshall; 1955, W. F. Riches; 1957, R. E. Booker; 1958, A. Brown; 1960, J. M. Armitage; 1962, J. Z. Gajda; 1963, S. Weinberg; 1964, I. D. F. Schofield; 1965, H. R. Bergman; 1966, J. S. Uniat; 1967, G. K. Hurd; 1968, W. W. Dowhos; 1969, J. M. Hanna.

AWARDED THE DIPLOMA IN DENTAL PUBLIC HEALTH

1946, H. K. Brown, S. L. Honey, F. A. Kohli, H. R. McLaren; 1947, G. K. Clarke; 1948, M. Kapusta, G. T. Mitton, A. B. Sutherland, H. L. Windrim; 1949, R. S. Langstroth, H. E. McKenna, R. A. Connor, B. J. O'Meara; 1950, J. W. M. Lawrence, W. A. McDonagh, F. McCombie, R. M. Grainger, A. E. Chegwin; 1951, C. I. Coburn, W. G. Dawson; 1952, T. L. Marsh; 1953, F. H. Compton, M. E. Jarrett; 1954, R. E. Feasby; 1955, A. M. Hunt, J. A. Duncan; 1956, D. G. Brett-Williams; 1957, J. M. Conchie, C. H. McCormick; 1958, S. J. Gallagher, H. J. Phillips; 1959, A. E. Ward, W. A. Zacherl, T. J. Gavriloff, N. Chavalit, H. S. Grey, W. A. Salter; 1960, G. Bastien, V. E. Capogreco, A. W. Samuels, K. S. Yim; 1961, D. C. T. Bullen, A. S. Gray, W. M. Sinclair; 1962, Y. Halilamien, W. C. King, D. W. Lewis, B. P. Martinello; 1963, A. R. Awang, A. F. Calip, H. A. Grimsrud, A. R. Guevara, S. Lauhawathana, V. R. Malabanan, V. E. Potter; 1964, L. P. Alfiler, H. G. W. Bennett, T. M. A. Curry, W. H. Harrington, A. B. Khan, B. D. Lopez, E. R. Viscarra; 1965, B. Gauk, P. H. Guevremont, A. L. Lizaire, J. McGaughey, I. Mosaheb, D. Parfitt, H. D. Sulaiman; 1966, J. V. P. Chatwin, A. N. E. F. Edwards, J. E. Russell, C. G. Shapera, B. Williams, K. P. Young; 1967, W. H. Cheong, S. W. Goh, S. W. Muller, J. E. Purdie, R. G. Romcke, E. F. Shaunessy, H. J. Short, R. F. Valentini, J. J. G. Willey, W. C. P. Wright; 1968, M. A. Abramson, R. L. Ellis, P. O. Finnigan, O. B. Franklin, S. Green, N. Huculak, J. W. Jolly, K. Kawall, M. W. MacLean, J. P. Moran, P. Tantiwongse; 1969, D. W. Banting, A. A. Bene, C. C. Colpitts, J. H. Hoffman, G. P. Jocys, E. K. Kizito, J. L. Leake, R. E. McDermott, K. C. E. Park, R. K. Ryan, J. W. Stamm, I. W. Susser, J. L. Wishner, A. S. M. Wu.

AWARDED THE DIPLOMA IN ORTHODONTICS

1946, E. E. Johns; W. K. Shultis, D. A. Campbell; 1948, L. E. Riddolls, V. P. Webb; 1949, R. A. Erickson, D. H. Jenkins, R. D. Leuty, W. B. Malloch; 1959, A. Feldman, J. Giblon, S. Hegedus, R. B. Ross; 1960, J. A. Bimm, D. A. Eisner, C. R. Ibanez; 1961, V. M. Flores Estrada, R. M. Hamilton, F. H. Mader, P. G. Peloso; 1962, G. M. Dewis, G. H. Hanson, G. Lie, W. J. McLuhan, K. N. Munro; 1963, D. Engel, A. R. S. Gray, D. S. Gupta, B. W. Pickering; 1964, M. I. Bernstein, R. Delia, R. D. Haselton; 1965, G. J. Boucher, W. S. Flatt, H. C. Parrott, M. Herrera; 1966, E. Cohen, V. P. Gilbert, O. Grywalski, E. D. MacKay, R. A. Mitchell, M. E. Sera; 1967, R. C. Baker, D. J. Boyko, R. G. Cross, C. R. Hill, E. Hisaki, H. Tile; 1968, R. Albert, R. G. Bozek, A. Joe, E. Luks, W. J. Sinclair, B. R. W. Smith; 1969, A. M. Davis, H. H. G. Fraser, G. A. James, W. J. Jenkins, E. A. King, R. T. Lang, A. R. Patterson, R. C. A. Pileski.

AWARDED THE DIPLOMA IN PAEDODONTICS

1952, W. H. Feasby, R. L. Scott; 1962, N. Levine; 1966, J. C. Duncan, Y. Lee, B. A. Richardson; 1967, R. L. Moran, G. C. S. Ng, A. P. C. Wong; 1968, R. B. Layug; 1969, M. A. Kay, K. C. Titley.

AWARDED THE DIPLOMA IN PERIODONTICS

1947, D. S. Moore, C. T. Peterson; 1948, R. Brown, J. C. Whitney, 1950, M. M. Currie; 1951, H. B. Squires; 1952, D. L. Anderson, J. E. Speck, J. W. Clark; 1958, J. A. Whyte; 1959, F. Servos; 1960, A. W. Chapple; 1961, W. Fleming; 1962, C. S. Whitman; 1963, R. N. Jack, F. C. Lackie; 1964, A. Bennick; 1965, H. L. Freedman; 1966, J. K. Hicks, J. G. Linghorne; 1967, W. H. Mills; 1968, V. B. del Rosario, S. K. Goldman, K. H. Wright; 1969, E. Freeman, J. L. Garcia, M. Garcia.

CALENDAR 1970

January

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CALENDAR 1971

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August

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September

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November

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December

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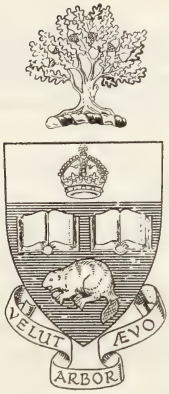
UNIVERSITY OF TORONTO



Faculty of Dentistry

ANNOUNCEMENT FOR 1970-1971

DIVISION OF DENTAL HYGIENE

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CALENDAR FOR 1970–71

THE FACULTY OF DENTISTRY

1970

April	1	*Wednesday*	Last day for receiving applications for early admission.
April	15–29	*Wednesday*	Annual examinations (approximate dates).
May	29	*Friday*	Commencement.
June	1	*Monday*	Last day for receiving applications for admission.
June	30	*Tuesday*	Last day for receiving applications for supplemental examinations.
July	1	*Wednesday*	Dominion Day. University buildings closed.
Aug.	3	*Monday*	Civic Holiday. University buildings closed.
Aug.	6–14	*Thursday* *Friday*	Supplemental examinations (approximate dates).
Sept.	7	*Monday*	Labour Day. University buildings closed.
Sept.	17	*Thursday*	Registration, First and Second Years (a.m.)
Sept.	21	*Monday*	Classes begin.
Oct.	12	*Monday*	Thanksgiving Day. University buildings closed.
Nov.	11	*Wednesday*	Remembrance Day.
Dec.	18	*Friday*	Term ends at 5 p.m.
Dec.	25	*Friday*	Christmas Day. University buildings closed.

1971

Jan.	1	*Friday*	New Year's Day. University buildings closed.
Jan.	4	*Monday*	Second term begins.
April	1	*Thursday*	Last day for receiving applications for early admission.
April	5	*Friday*	Good Friday. University buildings closed.
May	24	*Monday*	Victoria Day. University buildings closed.
May	28	*Friday*	Start of University Commencement.
June	1	*Tuesday*	Last day for receiving admission applications.
June	30	*Wednesday*	Last day for receiving applications for supplemental examinations.
July	1	*Thursday*	Dominion Day. University buildings closed.

ADMINISTRATIVE OFFICERS

1969–1970

THE UNIVERSITY

President . . C. T. Bissell, M.A., Ph.D., D. ès L., D.Litt., LL.D., F.R.S.C.
Assistant to the President . . . . . N. S. C. Dickinson, C.D., B.A.

Executive Vice-President (Academic) and Provost . . . J. H. Sword, M.A.
Vice-Provost and Executive Assistant to the President D. F. Forster, B.A., A.M.

Executive Vice-President (Non-Academic) . . A. G. Rankin, B.Com., F.C.A.
Executive Assistant to the Executive Vice-President (Non-Academic) J. F. Brook
Vice-President (Administration) . . . . . F. R. Stone, B.Com., F.C.A.
Secretary of the Board of Governors . . . . . D. S. Claringbold
Director of Administrative Services . . . . . M. A. Malcolm, B.A.
Director of Physical Plant . . . . . F. J. Hastie, B.Sc., P.Eng.
Director of Finance . . . . . (to be appointed)

Vice-President (Health Sciences) . . . J. D. Hamilton, M.D., F.R.C.P.(C)
Vice-President (Research Administration)
G. de B. Robinson, M.B.E., B.A., Ph.D., F.R.S.C.
Director of the Office of Research Administration Miss S. Dymond, B.A., Q.C.

Vice-President and Registrar, and Secretary of the Senate
R. Ross, M.B.E., M.A.
Executive Assistant to the Vice-President and Registrar, and Assistant Secretary of the Senate . . . . . W. Kent, M.A.

Vice-President and Graduate Dean
E. Sirluck, M.B.E., M.A., Ph.D., LL.D., F.R.S.C.

Chief Librarian . . . . . R. H. Blackburn, M.A., B.L.S., M.S., LL.D.

Director of University Extension . . . . . G. H. Boyes, M.A.

Director of Admissions . . . . . E. M. Davidson, B.A.
Director of Student Awards . . . . . Miss H. L. Reimer, B.A., B.Ped.
Secondary School Liaison Officer . . . . . W. A. Hill
Director of Statistics and Records . . . J. M. Tusiewicz, M.A.Sc., M.B.A.
Director of University Health Service
G. E. Wodehouse, M.C., M.D., F.R.C.P.(C), M.R.C.P.
Assistant Director of University Health Service —Women . . . . . Miss F. H. Stewart, B.A., M.D.
Director of Career Counselling and Placement Centre A. W. Headrick, M.A.
Director of International Student Centre . . . . . Mrs. K. Riddell, B.A.
Director of the Advisory Bureau
D. J. McCulloch, B.A., M.D., D.Psych., F.R.C.P.(C)
Director of Housing Service . . . . . Mrs. M. G. Jaffary, B.A.

Director of University of Toronto Press . . . . M. Jeanneret, B.A., LL.D.

Director of Information . . . . . K. S. Edey
Director of Alumni Affairs . . . . . J. C. Evans, B.A.
Director of Development . . . . . R. L. Jones

Warden of Hart House . . . . . E. A. Wilkinson, B.A.
Director of Athletics and Physical Education —Men . . . . . W. A. Stevens, B.S.
Director of Athletics and Physical Education —Women . . . . . Miss A. Hewett, B.Ed., P.E.

ADMINISTRATIVE OFFICERS
1969-1970

THE FACULTY OF DENTISTRY

Acting Dean ..... P. G. Anderson, D.D.S.
Secretary ..... A. G. Read
Director, Division of Dental Hygiene ..... Marjorie Jackson, D.D.S.
Library Chairman ..... J. G. Dale, B.A., D.D.S., F.R.C.D.(C)
Staff Librarian ..... Miss P. M. Smith, B.A., B.L.S.

Communications relating to entrance requirements and admission should be addressed to the Office of Admissions, University of Toronto, Toronto 181, Ontario; Communications relating to standing, curricula, instruction and examinations in the Faculty of Dentistry should be addressed to the Dean, Faculty of Dentistry, University of Toronto, 124 Edward Street, Toronto 101.

The first course in Dental Hygiene in North America was given at Fones Clinic, Bridgeport, Connecticut, U.S.A., in 1914.

A two-year course in Dental Hygiene, leading to a diploma, was established by the Senate of the University of Toronto, in 1951. Six students were enrolled in the first year of the course in session 1951–1952.

ADMISSION

1. Dental Hygiene is a two-year course leading to the Diploma in Dental Hygiene. Registration is offered to approximately fifty students in the first year on the basis of

(*a*) academic standing as indicated by the certificates submitted; and

(*b*) character and fitness for the course.

2. ADMISSION REQUIREMENTS

In 1970, Ontario candidates for admission to the first year must have standing in the following Grade 13 subjects with an overall average of at least 60%.

English (two credits)

Chemistry (one credit)

Optional subjects for a further four credits, chosen from—

one credit: Biology; Physics; Geography; History; Music; Art. A candidate may not offer both Music and Art.

two credits: French; German; Greek; Italian; Latin; Russian; Spanish; Mathematics A (alone).

three credits: Mathematics A and B (together).

Preference will be given to candidates with standing in **Biology.**

In lieu of Ontario Grade 13 Music, standing in one of the following examinations of the Royal Conservatory of Music of Toronto or equivalent is accepted: (i) Grade VIII Practical with Grade II Theory; (ii) Grade IV Theory. If the R.C.M.T. or equivalent examinations are offered, candidates must have the required 60% average on the *academic* papers offered. R.C.M.T. or equivalent examination marks are not included in the calculation of the overall average.

It is strongly recommended that Ontario candidates have Grade 12 standing in at least six subjects (excluding Physical Education). The subjects chosen should include at least *five* of the following subjects and at least one subject from each of the four groups:

(i) English

(ii) French; German; Greek; Italian; Latin; Russian; Spanish

(iii) Geography (Parts 1 and 2); History (Parts 1 and 2)

(iv) Mathematics (Parts 1 and 2); Science (Physics and Chemistry)

In 1971, the compulsory Grade 13 subjects will be **Chemistry** and **Biology,** rather than English and Chemistry. Other changes may be made after this Calendar is printed: students are strongly advised to consult the University of Toronto Admission Circular for 1971 when it is published.

Candidates offering certificates other than Ontario Grade 13 should refer to the section "Equivalent Certificates".

3. ADMISSION ENQUIRIES

Enquiries concerning admission requirements and requests for evaluation of credentials should be directed to the Office of Admissions, University of Toronto, Toronto 181, and not to the Faculty of Dentistry. Letters of enquiry should include detailed information on academic status.

4. APTITUDE AND ACHIEVEMENT TESTS

Ontario students will present the results of the aptitude and applicable achievement tests offered through the Ontario Department of Education. Other students may improve their competitive position by taking the aptitude test of the College Entrance Examination Board, Box 592, Princeton, New Jersey, 08540, U.S.A. *Dental* aptitude tests are not required.

5. APPLICATION PROCEDURES

All candidates must submit an application form and supporting documents to the Office of Admissions, University of Toronto, Toronto 181.

Supporting documents include all final secondary school certificates held. These certificates must indicate the subjects studied and grades obtained. If a certificate is not available at the time of application, candidates must indicate the exact name of the certificate to be presented for admission, and the subjects included therein, as well as the approximate date available. A notarized English translation must accompany certificates which are in a language other than English or French.

In addition a student who has previously attended a university must submit the following:

(i) official transcripts issued by the university or college previously attended, giving in detail the courses completed, with the standing and grades in each. Transcripts or a supporting letter from the Registrar of the university or college must indicate that the candidate has been granted honourable dismissal and is eligible for re-admission to the institution concerned in the Session for which she seeks admission to the University of Toronto;

(ii) official statements or calendars giving full information on the content of the university courses covered by the transcripts submitted.

Candidates who are *current* Ontario Grade 13 students should obtain application forms from their high schools; all others should request the forms from the Office of Admissions, University of Toronto, Toronto 181.

6. TERMINAL DATES FOR SUBMISSION OF APPLICATIONS

Applications for admission should be submitted as early as possible in the year for which the candidate seeks admission.

April 1—Applications to be considered for early admission (see Section 8).

June 1—All other applications. Only in circumstances which the Committee on Admissions deems exceptional will a late application be considered.

7. ADMISSION PROCEDURES

Candidates whose applications are successful will be notified by a Letter of Admission. They will be required to inform the University promptly of their acceptance or refusal of the offered admission, and to pay a $25 deposit within a specified time. The deposit will be applied against fees or, if the candidate fails to register, will be forfeited. Full instructions will be given with the Letter of Admission.

8. EARLY ADMISSION

(Only current Ontario Grade 13 students are eligible.)

Ontario Grade 13 students wishing to avail themselves of the Early Admission procedures, which will provide notification of Early Admission after June 11, must ensure that their applications are forwarded from their schools by April 1.

9. LIMITED ENROLMENT AND SELECTION

Since accommodation and certain other facilities are restricted, the University has found it necessary to limit enrolment in many Divisions and courses, including Dental Hygiene.

Applicants for admission should therefore regard the holding of the published admission requirements as meaning only that they are eligible for selection to the course.

Under the University's admission practices, the school record of the applicant, the confidential report of the school and other tests of the student's ability that are available are considered. The length of time taken and number of sittings at examinations to obtain the admission requirements also are taken into account. Decision on those whose certificates meet the published requirements but whose academic record is not of a standard to permit immediate admission will be deferred, and their application will be considered for selection at a later date when all applications have been examined. A decision will be communicated to these applicants as early in the summer as possible.

10. MATURE STUDENTS

For admission as a mature student (Ontario resident 25 years or older on October 1) consult the Office of Admissions.

It is only in exceptional circumstances that a candidate aged 30 or over will be admitted to the Dental Hygiene course.

11. CANDIDATES WHO HAVE PREVIOUSLY FAILED IN UNIVERSITY WORK

Candidates with a previous failure in University work may be considered under special circumstances; candidates with two previous failures are normally refused admission.

12. ENGLISH FACILITY REQUIREMENTS

Candidates whose mother tongue is not English may be required to meet an appropriate standard in a recognized test of English facility such as the University of Michigan English Language Test, the Certificate of Proficiency in English issued by the Universities of Cambridge or Michigan, or the Test of English as a Foreign Language (T.O.E.F.L.).

13. EQUIVALENT CERTIFICATES

The following certificates are usually accepted as equivalent to Ontario Grade 13 although individual subjects cannot always be equated. Candidates offering Senior Matriculation programmes from provinces other than Ontario must offer at least five subjects and satisfy the subject requirements specified for the course of their choice. Specific details on subjects and standards required for the course must be requested well in advance of the application deadline.

Canada:

Alberta, Manitoba, Nova Scotia, Saskatchewan—Grade 12

British Columbia, New Brunswick—Grade 13 or First Year University

Newfoundland—First Year Memorial University

Prince Edward Island—First Year at the University of P.E.I.

Quebec—Senior High School Leaving Certificate; English Catholic Senior High School Leaving Certificate (5th Year High—Grade 12). First Year C.E.G.E.P. Other certificates will be considered.

United States, Central and South America:

First Year University standing (normally 30 semester hours) in acceptable subjects from an accredited institution. Students with high school diploma and C.E.E.B. Advanced Placement examinations will be considered.

England, West Indies, East and West Africa, Hong Kong:

Standing in five subjects of which at least two must be passed at advanced level; or passes in four subjects of which at least three must be passed at advanced level on the following certificates:

(i) General Certificate of Education.

(ii) School and Higher School Certificate.

(iii) University of Hong Kong Matriculation Certificate.

(iv) Hong Kong English School Certificate from 1965, re-named the Certificate of Education (English) in 1968. Standing in advanced level must be offered in addition to it. Other certificates will be considered.

India, Pakistan:

Bachelor's degree with high standing.

A Graduation (Maturity) certificate from final year of secondary school is required from most European and Commonwealth countries.

REGISTRATION

14. Detailed instructions concerning Registration and Health Requirements will be mailed to returning and newly admitted students before the beginning of each academic year.

15. On Registration Day, before receiving an Admit to Lecture card, each student must register in person with the Secretary of the Faculty in the Dental Building. When registering, she must present a receipt or receipts from the Chief Accountant of the University showing payment of at least the first instalment of fees, including the instruments specified for her class. A student being admitted to the course should also present her Letter of Admission.

16. A student who fails to register at the prescribed time will be required to pay to the Chief Accountant a Late Registration fee of $10 plus $1 for each day of delay to a maximum of $20. Faculty Council may at its discretion refuse a student permission to register late.

17. Students who have been in attendance in the first year of the course and have passed all examinations are expected to register in person the following session without preliminary application, unless they notify the Faculty to the contrary.

18. A student must comply with such other registration procedures as may be required by the University.

REGULATIONS

DISCIPLINE

19. Student discipline in the University of Toronto is under the general direction of the Caput. A summary of the regulations of the Caput concerning student discipline will be found in the Faculty of Dentistry Calendar.

ATTENDANCE

20. Students are required to attend all lectures, clinics and laboratories except in cases of unavoidable absence.

21. A student whose attendance at lectures or laboratories, or whose work, is deemed by the Council of the Faculty to be unsatisfactory, may have her registration cancelled at any time by the Council of the Faculty, or may be barred from examinations.

TECHNIQUE WORK

22. All technique work must be done in the Faculty laboratories under the direction of the staff and in accordance with the regulations laid down by the departments concerned.

HEALTH AND PHYSICAL EDUCATION

23. Every person admitted to the University as an undergraduate must, at the time of her first medical examination by the University Health Service, present satisfactory evidence of successful vaccination within three years prior to the date of examination or must be vaccinated by the examining physician.

24. The University requires that each student in her first year at the University take a medical examination given by the University Health Service. In addition each first-year student, unless exempted as provided below, must register for and satisfactorily complete a swimming test and the required programme in physical education. Any student unless exempted who does not satisfactorily complete the physical education requirement BEFORE advancing to the second academic year of her course shall either (1) register for and satisfactorily complete the requirement BEFORE the end of the second academic year of her course, OR (2) pay an additional fee of $50 to be assessed in February of the session in which she is registered in the second academic year.

25. Physical Education credits may be earned by participation in instructional classes, swimming and water safety classes, intercollegiate and intramural sports.

26. Exemptions: (1) one year's satisfactory standing in physical education at this or any other University; (2) admission by advance standing to second year (automatic exemption); (3) if age 25 years or more; (4) ex-military service (permanent force); (5) exemption by the University Health Service;

(6) special consideration. Exemptions must be claimed in person at Room 230, Benson Building, 320 Huron Street (Women's Athletic Building) by October 31.

PARTICIPATION IN LABORATORY TESTING

27. At various stages of the teaching programme there are occasions when biochemical, physiological or pharmacological observations are made by students on themselves or on fellow-students. These exercises include some diagnostic or immunization procedures in common use. Unless some valid reason exists, students are expected to participate in such exercises.

28. If any investigative work involving student participation does not form part of the teaching programme, participation is entirely voluntary.

TRANSFERS AND WITHDRAWALS

29. A student who wishes to withdraw or to change her course or Division in the University should consult the Faculty Secretary.

UNSATISFACTORY WORK

30. The following University regulations apply to students in the Faculty of Dentistry.

(*a*) In cases of unsatisfactory work of a very serious nature, Faculty Council may recommend to the Senate Committee on Admissions that a student shall be debarred from the University.

(*b*) Faculty Council will, except in very exceptional circumstances, refuse to readmit to this faculty any student who on two occasions fails to secure the right to advance to a higher year in this Faculty or a like faculty.

(*c*) Faculty Council may for unsatisfactory work suspend a student from regular attendance in this Faculty for a given period of time not exceeding two years and/or until the satisfaction of other conditions as it may see fit. Upon satisfying the conditions of the suspension the student shall be entitled to re-enrolment in this Faculty.

(*d*) Any student who withdraws after February 15, or who does not withdraw but does not write the annual examinations, will be regarded for the purposes of these regulations as having failed her year.

31. The following definitions have been approved by the Senate for all faculties in calendars, correspondence and records:

(i) "*Debar*", "*Debarred*", "*Debarment*". This term is restricted to a student who by decision of the Senate's Committee on Admissions is debarred from registration in any faculty of the University.

(ii) *Refused readmission to the faculty*. This term is applied to a student whom the relevant faculty Council has decided is to be refused permission to register again in that faculty (i.e. the student is required to withdraw from the faculty and she may not re-enrol).

(iii) *Suspended from regular attendance in a faculty.* This term is applied to a student whom Faculty Council has decided will not be permitted to continue in her course in this Faculty unless and until she has fulfilled certain specified conditions. The decision of suspension will always include the conditions whether of a lapse of a stated period of time or the completion of specified work, or both, or other conditions, which if satisfactorily met will entitle the student to re-enrolment or readmission.

EXAMINATIONS

32. A student must obtain standing in the subjects of the course and at the times set by Council. No student will be permitted to register in the second year until she has obtained standing in all the subjects of the first year.

33. In any course in which the department concerned recommends that there be no final examination, the Department may require students, who have not obtained a satisfactory standing in their term work (including tests), to pass such a final examination.

34. To obtain standing at an annual examination, a student must secure at least 50% of the marks assigned to each subject, as well as at least 57% of the aggregate marks assigned to the subjects of the year.

35. A student who has secured at least the required minimum of 57% of the total marks, may write supplemental examinations on the individual written papers in which the required 50% has not been obtained: **but not more than one supplemental may be written on any one paper.**

36. A student who has failed to obtain the required minimum of 57% of the total marks, will be permitted to write, at a subsequent examination, all the subjects of the examination at one examination session. If successful at this time in obtaining at least the required 50% of the marks assigned to each subject and the minimum 57% of the total marks assigned, standing will be granted in the year in question; otherwise the year is deemed to have been lost. In order to continue the course, it will be necessary to repeat the entire work of the year in question, including all examinations. **In the case of students in their first year of attendance in the Faculty, permission to repeat the year, or to repeat a practical course, will be granted by the Faculty Council only under exceptional circumstances.**

37. Students required to write supplemental examinations must do so at the examination session next ensuing, unless Council has granted prior permission for alternative arrangements.

38. Term examination may be held in any subject and at any time at the discretion of the instructor or by order of Council, and the results of such examinations may be incorporated with those of the annual examinations.

39. A candidate with D grading in any laboratory or clinical course may, at the discretion of Council, be required either to repeat the work of the entire year, including all examinations, or to repeat the work of that laboratory or

clinical course when such instruction is available. In the latter case, such tests or examinations shall be taken as may be prescribed. **Students failing a laboratory or clinical course in their first year of attendance in the Faculty do not have the right to repeat: see section 36.**

40. Without petition, answer papers will be re-read in each subject in which a candidate obtains less than 50%, and no appeal will be considered for further re-reading of such papers. **In no case will marks be reported to the candidate.**

41. Petitions for consideration with regard to the annual or supplemental examinations on account of sickness, domestic affliction, or other causes, must be filed with the Secretary of the Faculty on or before the last day of the examinations together with a doctor's certificate stating that the candidate was examined at the time of the illness or other evidence.

Aegrotat standing in any year but the final year is seldom granted at the annual examinations. Instead, students may be permitted to write at the time of the Supplemental examinations if the facts submitted warrant such consideration.

42. A report will be sent to every student showing the grade obtained in each subject, the ranking in the class, and the over-all average for the year.

Grade in each subject will be indicated as follows:

A. 75–100%	C. 50–65
B. 66–74	D. Below 50

Annual average will be indicated as follows:

A. 75–100%	C. 57–65
B. 66–74	F. Below 57

43. Candidates who obtain an average of not less than 75% in all the subjects of the year, and not less than 50 per cent on any one subject, will be considered to have passed with honours.

44. No candidate will be admitted to the annual or supplemental examinations unless all fees have been paid.

45. A candidate in a course involving practical work in laboratory or clinic may be denied admittance to the annual or supplemental examinations if the professor under whom the work is carried on reports in writing to the Secretary that satisfactory laboratory or clinical work has not been done, or there has been a signal failure in the practical examinations.

46. The clinical department may in certain special cases report the work of a student as *incomplete*, in which case a specified further period shall be spent in the Clinic, after which it shall be necessary to pass such examinations as may be given by that department.

47. The supplemental examinations are held during August. A candidate for these examinations is required to send the completed application form, accompanied by the appropriate fee, to reach the Chief Accountant no later than June 30. Council reserves the right to reject applications of, or impose penalties upon, those failing to comply with these requirements.

48. No supplemental courses will be given in laboratory or clinical work.

49. Supplemental examinations are generally written at the Faculty of Dentistry. As a convenience to students living at a distance from Toronto the Faculty will, upon written request, endeavour to arrange for examinations to be written at a nearer university. Students wishing to take advantage of this must undertake to defray the extra expense involved and, to allow time for the arrangements to be made, must present their written request to the Faculty Secretary by June 15.

50. As students are not permitted to register until all conditions are removed, it is recommended that students who write these examinations at points outside Toronto maintain contact with their home addresses until they receive notice of the removal of their conditions.

EXEMPTIONS

51. Students may petition for exemption from any subject in which they have successfully completed a course elsewhere, although no student may be granted exemption from more than one subject in any year. Students granted exemption will at the end of the year be given a class ranking and average based on the subjects actually taken, and the 57% requirement and supplemental regulations (see Section 34 *et seq.*) will apply on the subjects actually taken. They will not be eligible to receive any prize or scholarship in the year of the exemption. Petitions must be submitted to the Faculty Secretary, in writing, no later than three weeks after the opening of the Fall term.

UNIFORMS

52. Each registrant in Dental Hygiene will receive an appropriate number of laboratory coats, uniforms and caps. Students must provide themselves with white stockings and with white shoes of an approved pattern, details of which will be given on registration day. These shoes and stockings *must* be worn during all clinical assignments. Each student is responsible for the laundry of her uniforms, caps and laboratory coats.

ARTICLES LOST AND FOUND

53. Students are required to report promptly at the Secretary's office, the loss or finding of any articles in or about the Faculty buildings or grounds. The Faculty will not accept any responsibility whatever for books, instruments, equipment or clothing lost or removed from the Faculty premises. Students should take advantage of the locker facilities available throughout the Dental Building.

TRANSCRIPTS OF RECORD

54. Upon request, and payment of the required fee, transcripts of scholastic records will be forwarded to universities or other institutions of learning.

APPEALS

55. A student has the right of appeal to the Senate from any decision of the Faculty Council. A student wishing to appeal to the Senate against a decision of Faculty Council should consult the Secretary of the Faculty, the registrar of her college, or the office of the university registrar about the preparation and submission of her petition to the Secretary of the Senate.

FEES

	First Year	Second Year
Academic Fee	$420	$420
Incidental Fee	45	45
Instrument Fee	70	55
	535	520
or, if paid by instalments		
First Instalment	325	310
Second Instalment	213	213

56. NOTES

(*a*) The Fees quoted above are for guidance only, as the final figures for the session are not available at the time of going to press. The Fees Form for 1970-71, issued by the Chief Accountant of the University, gives the correct fees.

(*b*) The above fees apply to *women*: for *male* students the incidental fees, and first instalments, would be $25 higher.

(*c*) The Academic Fee includes the following fees: Tuition; Library and Laboratory Supply; Physical Education; one Annual Examination; Diploma; and Laboratory Fee.

(*d*) The Incidental Fee includes the following fees: Students' Administrative Council; Athletic Association; Health Service; Dental Students' Society.

(*e*) The Instrument Fee includes the purchase or rental of instruments, equipment and materials; compulsory Bulletins and Stationery Supplies; uniforms, laboratory coats and caps; graduation pins.

57. A student enrolling in the Course is required to pay either the Total Fee for the session, or at least the First Instalment, on or before the opening date of the Academic Year. She cannot receive an Admit to Lectures card from the Secretary of the Faculty until she shows proof that she has done so.

58. A student who has not paid her total fee at the opening of the Session is required to pay the Second Instalment by the opening day of the second term. After January 25th an additional fee of $3 a month will be imposed to a maximum of $10. All fees for the session must have been paid in full before the student can be admitted to the annual or final examinations.

59. In order to avoid delay in registration at the opening of each academic year, it is recommended that fees be forwarded by mail prior to the date of registration, together with the Fees Form which is mailed to each student during the summer. Students should take care to complete all required parts of the Form, giving full name, course, year, etc. Cheques should be made payable to the University and sent to the Chief Accountant, University of Toronto.

60. Students wishing to pay their fees in person may do so at the office of

the Chief Accountant. Particulars of office hours and location will be sent to each student during the summer.

61. OTHER FEES

Each student is required to pay to the Chief Accountant at the opening of the session, or as otherwise specified, such of the following fees as may be required of her.

Equivalent certificate fee $5

Each student who has been admitted to the First Year upon a certificate or certificates granted outside the Province of Ontario and covering all or any part of the admission requirements must pay this fee.

Advanced standing fee $10

Each student who has been admitted to advanced standing from another university or college must pay this fee.

Supplemental Examination fee ..... $10 for the first paper and $5 for each additional paper.

Each student who applies to write a supplemental examination must pay this fee.

AWARDS

CENTENNIAL ADMISSION SCHOLARSHIP

This scholarship, presented by the Royal College of Dental Surgeons of Ontario, is awarded annually to an Ontario resident entering the first year of the course. To be eligible she must complete Ontario Grade 13, at first attempt and with an average of at least 75%, in the academic year immediately prior to admission. The scholarship, value $200, was established and first awarded in 1967. Application is not required.

DENTAL HYGIENE GENERAL PROFICIENCY SCHOLARSHIP

The Dental Hygiene General Proficiency Scholarship, the gift of an anonymous donor, is valued at $100 and is awarded annually by the Council of the Faculty of Dentistry to that student of the First Year of the Dental Hygiene course who ranks highest in general proficiency.

The first award was made in 1957 (under University Senate Statute No. 2488).

ANDRÉE HÉBERT BRUNELLE SCHOLARSHIP

Established and first awarded in Session 1966–67, this Scholarship is given by the Ontario Dental Hygienists' Association in honour of a pioneer teacher of Dental Hygiene. The award, which is based on highest aggregate marks in three major subjects of First Year—Dental Anatomy, Microbiology and Histology—requires first-class Honours in the year. Its value is $100.

MOSBY BOOK AWARD

Through the generosity of the Mosby Publishing Company, a textbook is awarded annually, on the recommendation of the Faculty Council, to a First Year Dental Hygiene student on the basis of general merit.

SANDRA MATHER MEMORIAL AWARD

This prize, first awarded in session 1963–64, is given by the Ontario Dental Hygienists' Association in memory of the late Sandra Anne Mather, Dip.Dent. Hyg. It is awarded to a student who has attended both years of the course in this Faculty and has passed the final year with first-class honours. High standing in the clinical work of that year, and participation in extra-curricular activities, are also required. The value of the award, originally $50, was increased in 1966–67 to $100.

PROVINCE OF ONTARIO STUDENT AWARDS PROGRAMME

Awards under this programme will be made available to all Ontario students provided:

(i) they are in full-time attendance at a Canadian University (or other eligible institution).

(ii) they can demonstrate need of financial assistance.

(iii) they are either Canadian citizens or landed immigrants, have resided in Ontario for at least twelve months prior to entering the course, and intend to reside permanently in Canada.

Each applicant's need will be assessed by the Department of University Affairs and awards will be part loan and part bursary.

Further information is printed on the application forms which may be obtained from the Faculty Secretary.

DENTAL ALUMNI ASSOCIATION REVOLVING LOAN FUND

In 1957, the University of Toronto Dental Alumni Association established a Loan Fund which was designed to help students in need and who would ordinarily find no other form of assistance available to them. The generosity of the Association has resulted in the Fund being increased substantially each year.

Information concerning assistance from the Fund may be obtained from the Secretary of the Faculty.

ONTARIO DEPARTMENT OF HEALTH

The Ontario Department of Health offers financial assistance to a limited number of second year students who are interested in public health work. In return for the assistance the student must contract to work one year for a specified local agency. Information leaflets and application forms may be obtained from the Secretary of the Faculty or from the Senior Consultant, Public Health Dentistry, Ontario Department of Health, Room SW 925, Hepburn Block, Queen's Park, Toronto.

CURRICULUM

FIRST YEAR

Subject	Lecture Hours	Clinical and Laboratory Hours	Total Hours
Anatomy, Gross and Oral	47	13	60
Chemistry	84	—	84
Clinical Practice	—	84	84
Dental Materials	14	—	14
English Composition and Literature	84	—	84
First Aid	6	—	6
Histology	28	56	84
Microbiology	19	15	34
Orientation to Dentistry	13	—	13
Periodontics	14	—	14
Preclinical Training	13	82	95
Psychology	57	—	57
Radiography	10	9	19
Total Hours	389	259	648

Each first year student, unless exempted, must also complete a physical training programme of some 44 hours.

SECOND YEAR

Subject	Lecture Hours	Clinical and Laboratory Hours	Total Hours
Clinical Practice	—	217	217
Dental Public Health	18	5	23
English Expression	38	24	62
Ethics	4	—	4
Microbiology	5	—	5
Nutrition, Public Health	28	—	28
Clinical	22	5	27
Orientation to Dentistry	42	—	42
Orthodontics	10	10	20
Pathology	27	—	27
Paedodontics	10	24	34
Periodontics	10	—	10
Pharmacology	12	—	12
Physiology	56	—	56
Preventive Dentistry	10	—	10
Radiography	—	42	42
Sociology	56	28	84
Total Hours	348	355	703

OUTLINE OF COURSES OF INSTRUCTION

ANATOMY, ORAL

The course is designed to teach the student, (1) the external and internal anatomy of individual teeth of the primary and permanent dentitions, (2) variations and anomalies of dental morphology, (3) the relationship of the teeth within the maxillary and mandibular dentitions, (4) the relationship of the maxillary to the mandibular dentition, (5) the relationship of the teeth to associated structures within the stomatognathic system, (6) the static and dynamic fundamental principles of the occlusion of the primary, mixed and permanent dentitions, (7) basic concepts related to an introduction to malocclusion, (8) the chronology of the dentition. First year: 33 hours.

Assistant Professor J. G. Dale.

ANATOMY, GROSS

A course of lecture-demonstrations, covering the various systems of the human body, including the viscera. Particular emphasis is given to the anatomy of the head and neck. First year: 27 hours.

Dr. P. Chapnick.

CHEMISTRY
INTRODUCTION TO BIOLOGICAL CHEMISTRY AND HUMAN NUTRITION

Course No. 100, Faculty of Food Sciences. A series of lectures and tutorials on the important principles in Biological Chemistry and their application to human nutrition. First year: 3 hours per week.

Dean B. A. McLaren and staff.

DENTAL MATERIALS

Lectures include an elementary understanding of the Physical and Chemical properties of materials and the influence of manipulation upon these properties. Also included are discussions on such topics as corrosion, tarnish, abrasion, polishing, etc. First year: 14 hours.

Professor W. D. MacKay.

DENTAL PUBLIC HEALTH

The course is designed to make the student more aware of her community. Current dental health problems and the attitudes of the public to dental health are discussed. Public health procedures and other proposals aimed at solving these problems are reviewed. The epidemiological approach to dental disease is explained with particular emphasis on dental health survey methods. The duties and role of the hygienist in public health are covered. Second year: lectures 18 hours; teaching seminar: 5 hours.

Professor A. M. Hunt and
Associate Professor D. W. Lewis.

ENGLISH

English 513. FICTION: Hardy, *Tess of the D'Urbervilles* (Macmillan); James, *Portrait of a Lady* (Riverside); two other novels to be announced; DRAMA: Ibsen, *The Wild Duck* (Methuen); Williams, *A Streetcar Named Desire* (Signet); one or two other plays to be announced; POETRY: four poets, to be announced.

Students are urged to read these works during the summer preceding registration. Essays will be assigned on these texts.

The Staff of the Department of English.

ENGLISH EXPRESSION

This course is planned to meet the communication requirements in the work of the dental hygienist. Attention is given to teaching methods followed by periods of teaching in the Toronto Public Schools. Other studies include public speaking, seminars, panel discussions, and study-group discussions. Practice is also given in the production of visual materials for instructional usage. Second year: 62 hours.

Mr. R. E. Boden

HISTOLOGY, ELEMENTARY AND DENTAL

Lecture and laboratory course in elementary histology. The primary tissues and their modifications are studied.

The course in dental histology consists of a series of lectures and microscope work given to the study of the tooth from the developmental stage, up to and including the tooth function. First year: lectures 28 hours; laboratory 56 hours.

Dr. A. Dale.

MICROBIOLOGY

This course consists of a general introduction to the factors concerned in the transmission and etiology of the common infectious diseases. The principles of immunisation, immunochemical procedures and sterilization are explained. The oral flora and their role in the development of dental diseases are discussed. Wherever applicable, laboratory demonstrations are used to illustrate the lecture material. First year: 34 hours. Second year: 5 hours.

Associate Professor E. M. Madlener.

NUTRITION

PUBLIC HEALTH NUTRITION

A lecture-seminar course intended to acquaint the students with factors influencing food use and selection, some current nutritional problems in North America, and with principles and techniques involved in Nutrition education in the community. Second year: 28 hours (Fall Term).

Assistant Professor M. J. Baigent.

APPLIED CLINICAL NUTRITION

The practical application of nutrition principles, including diet counselling. Second year: lectures 22 hours, laboratory 5 hours.

Assistant Professor D. F. J. Berry.

ORIENTATION TO DENTISTRY

The course is to familiarize the dental hygiene student with various phases of dentistry. The aims, principles and procedures are explained in lectures. The students participate in seminars and present case histories for group discussions. During the second year, the class is assigned to the various clinical departments for observation and experience. First year: lectures 13 hours; second year: lectures and seminars 42 hours, plus assignments.

Professor M. Jackson.

ORTHODONTICS

This course includes lectures, clinical and laboratory exercises to provide a brief introduction to orthodontic diagnostic record case assembly and preparation. Second year: lectures 10 hours, laboratories 10 hours.

Professor D. G. Woodside and Staff.

PAEDODONTICS

This lecture series is planned to acquaint the students with some of the basic principles of paedodontics. Emphasis is placed on the examination of the child

patient – normal and abnormal – occlusion, and recognition of various anomalies peculiar to children. In addition there are clinical assignments and hospital visitations which give the dental hygiene students practical experience in working with children. Second Year: lectures 10 hours, clinic 15 hours, hospital 9 hours.

Dr. N. Levine.

PATHOLOGY, GENERAL AND ORAL

The course is given during the first term of the second year and is designed to provide a foundation of general pathology which is then applied to and supplemented with a study of specific oral lesions. The fundamentals of inflammation, degeneration, and neoplasia are discussed. In the field of oral pathology, particular emphasis is given to a consideration of caries; conditions affecting the dental pulp; periodontal disease; various forms of stomatitis; malformations and anomalies; cysts and odontomes and other tumours. Second year: lectures, 27 hours.

Professor H. A. Hunter and Staff.

PERIODONTICS

A lecture course which deals with the development of periodontal disease, clinical manifestations, prevalence, diagnostic procedures and treatment. First year: 14 hours. Second year: 10 hours.

Professor C. H. M. Williams.

PHARMACOLOGY

A brief study of the derivation and effect of drugs used in the practice of dental prophylaxis. Second year: 12 hours.

Dr. C. Reynolds.

PHYSIOLOGY

Elementary course in general physiology. Lectures and demonstrations are given on the physiology of blood, circulation, respiration, the kidneys, digestion, metabolism, and the ductless glands. Second year: 56 hours.

Drs. D. H. Osmond and J. Blumenstein.

PRECLINICAL TRAINING AND CLINICAL PRACTICE

Factors which contribute to health and disease of the mouth are studied. Emphasis is given to the prevention of dental diseases. The first year course includes lectures and preclinical training in techniques used in scaling, packing and polishing. The major portion of this course is devoted to treating patients, both adults and children in the clinical department. First year: lectures 13 hours, preclinical and clinical 166 hours; second year: clinical 217 hours.

Professor M. Jackson and Staff.

PREVENTIVE DENTISTRY

This course contains lectures in the various phases of preventive dentistry which include caries, periodontal disease and malocclusion. The student will be given opportunity to apply some practical phases of preventive dentistry to the patient by assignment in the department of clinical dentistry. Second year: 10 hours.

Professor J. Kreutzer.

PSYCHOLOGY

Course No. 190: A lecture course on the methods and principles of psychology, emphasizing learning, motivation and perception. First Year: 57 hours.

Staff of the Department of Psychology.

RADIOGRAPHY

This course includes a series of lectures on the physics and application of radiography in dentistry. It also includes clinical instruction and practice in radiographic technique, processing and mounting of radiographs. First year: 19 hours; second year: 42 hours.

Professor H. G. Poyton and Staff.

SOCIOLOGY

Course No. 100: Introduction to Sociology. The Social Structure of the Community. Second Year: 84 hours.

The Staff in Sociology.

BOOK KITS

The following printed notes and other materials will be issued to all students at the time of registration or during term.

FIRST YEAR

A System of Examination and Treatment Planning.
Anatomy of the Primary Dentition.

SECOND YEAR

Dietary Program for the Control of Dental Caries, Jay.
Preventive Dentistry Students' Manual.

TEXT-BOOKS

The following text-books are used in the courses shown. To assist students in planning their purchases, the relative importance of each book is indicated: every student **must** have a copy of those marked "required"; students are urged to provide themselves with those marked "recommended"; those marked "reference" may be bought, but library copies will be available.

FIRST YEAR

ANATOMY, ORAL

An Atlas of Tooth Form, Wheeler (required).

CHEMISTRY

Elements of General Biological Chemistry, Holum (recommended).
Biochemistry, an Introduction to Dynamic Biology, Kay (recommended).

DENTAL MATERIALS

Elements of Dental Materials for Dental Hygienists and Assistants, Philips-Skinner (reference).

ENGLISH

See course outline.

HISTOLOGY

Essentials of Histology, Hoskins and Bevelander (reference).
Histology, Ham, 5th ed. (required).
Oral Histology and Embryology, Orban-Sicher Edition, 6th ed. (recommended).
Advances in Dental Histology, Gaunt, Osborn and Ten Cate (required).

MICROBIOLOGY

Bacteriology for Dental Students, Melville and Slack (recommended).

ORIENTATION AND PRECLINICAL TRAINING

Clinical Practice of the Dental Hygienist, Wilkins and McCullough (recommended).
Dimensions of Dental Hygiene, Steele (recommended).
A Textbook for Dental Assistants, Park and Ashman (reference).
The Dental Hygienist in Private Practice, Campbell (reference).
Accepted Dental Remedies, pub. American Dental Assoc. (reference).
Comprehensive Review for Dental Hygienists, Peterson (recommended).
Clinical Dental Hygiene, Peterson (recommended).
Current Clinical Dental Terminology, Boucher (reference).
Review of Dental Hygiene, Steele (recommended).
Periodontics for the Dental Hygienist, Allen, McFall, Hunter, Lea and Febiger (recommended).

SECOND YEAR

PSYCHOLOGY

Psychology, Munn, 5th ed. (recommended).

RADIOGRAPHY

A Manual of Dental and Oral Radiography Blackman and Poyton (recommended).

DENTAL PUBLIC HEALTH

The Dentist, his Practice and his Community, Young and Striffler (reference).

ENGLISH EXPRESSION

Effective Teaching, Oliver.

NUTRITION, CLINICAL

Nutrition for To-day, Robertson (reference).

The Science of Nutrition and its Application to Clinical Dentistry, Nizel (reference).

ORIENTATION AND CLINICAL PRACTICE

As First year.

PAEDODONTICS

Pedodontics, McDonald.

Paedodontic Clinic Manual, pub. U. of T.

PATHOLOGY

Oral Pathology, Kerr and Ash (recommended).

PHYSIOLOGY

An Introduction to Human Physiology, Green, 2nd ed. (required).

Function of the Human Body, Guyton, 3rd ed. (recommended).

Textbook of Anatomy and Physiology, Anthony, 7th ed. (recommended).

PREVENTIVE DENTISTRY

Chemistry and Prevention of Dental Caries, Sognnaes (reference).

Principles of Preventive Dentistry, Goose and Hartles (reference).

Improving Dental Practice Through Preventive Measures, Bernier and Muhler (recommended).

RADIOGRAPHY

As First year.

THE DENTAL LIBRARY

The Dental Library consists of two divisions: a department of the main University Library, and the Harry R. Abbott Memorial Library. However, the Library is run as a single unit, and the books are listed together in the catalogue of the Dental Library as well as that of the University Library. The collection contains about 10,000 books and bound journals, as well as many pamphlets, reprints, and unbound journals, and currently receives about 200 periodicals.

The Harry R. Abbott Memorial Library was established as the result of a bequest in memory of a graduate, the late Dr. Harry R. Abbott. The fund is administered by the Royal College of Dental Surgeons of Ontario, which itself also makes an annual grant to the Library.

The extensive Dental Library thus created not only possesses a representative and rather complete collection of modern dental books and journals, but also some first editions and early dental literature. In addition to the Dental collection, there are a great many books and journals relating to Medicine and the Sciences.

The Library privileges, besides being for the students and staff of the Faculty of Dentistry and of the University, are extended, under certain conditions, to the graduates.

DENTAL STUDENTS' SOCIETY

The Students' Society is the official undergraduate organization in the Faculty of Dentistry, and is the medium of communication between the student body and the Faculty Council, the University authorities, and the students of other Faculties.

Each full-time undergraduate registrant in the Faculty is *ipso facto* a member of the Society, which organizes and controls the athletic, dramatic, literary, social and other group activities of the student body.

Faculty representatives are appointed each session to encourage and assist the students in their participation in extra-curricular activities.

COLLEGES

NEW COLLEGE

New College is a multifaculty co-educational college; in addition to students from the Faculty of Arts and Science those from other Faculties and Schools are eligible for membership. This gives students from all divisions of the University the opportunity to participate in the life of a college and to associate with students in other fields of study. Tutorial classes are provided for First Year students in some subjects.

The new building, centrally located on the west campus, provides academic, social and dining facilities for all members of the College and in addition offers residence accommodation.

Students in the Dental Hygiene course interested in becoming members of New College should indicate this on the University's admission application form. This makes them eligible for selection by the College admission committee. Students selected by the College pay a New College fee of $15. They must register in person at the college after completing registration in the Faculty of Dentistry.

INNIS COLLEGE

Innis College was constituted on July 1, 1964, and admitted its first students in the following September. It is a multi-faculty college of the University of Toronto, and includes undergraduate students in all Faculties and Schools of the University.

A special feature is the Writing Laboratory. This service offers assistance to Innis College students in the skills and methods of writing essays and other academic reports. A staff of experienced teachers is available to give individual instruction.

The College has limited residential space available in houses on campus. Separate application for residence accommodation must be made directly to the Residence Co-ordinator of Innis College.

Students entering First Year will be invited to apply for membership after they have been accepted into their Faculty or School. Students entering the Second to Fourth Years who wish to join the College should obtain an application form from the Registrar, Innis College, University of Toronto.

A special college fee of $15 is payable to the Chief Accountant of the University of Toronto. This payment is made after the applicant has received notice of his acceptance by Innis College.

ACCOMMODATION

RESIDENCE

There is no residence in connection with the Faculty of Dentistry. All women's residences in the University are connected with individual colleges. If accommodation is available after the University registration is complete (towards the end of September) applications for accommodation in the residences may be considered.

OFF-CAMPUS ACCOMMODATION

Housing Service. For the convenience of those students who are not able to find accommodation in the University and College residences, the University maintains a listing of rooming houses, flats, apartments and homes. Information on these rooms may be obtained through the Housing Service office at 49 St. George Street, Toronto 5. Off-campus housing of this nature is not subject to University regulation; however, every effort is taken to make the information on the accommodation as complete as possible and students are encouraged to assist in this effort by reporting on the quality of the accommodation which they have occupied.

Ontario Student Housing Corporation. A modern student housing complex, located near the campus, is owned by the Corporation and is operated by it for the University of Toronto. When fully developed it will offer more than 700 unfurnished apartments, with stoves and refrigerators supplied. There are restaurant and shopping facilities. Occupancy is usually limited to students of the University of Toronto and preference is given to married students. Enquiries should be addressed to the University of Toronto Housing Service, 49 St. George Street, Toronto 5.

Campus Co-operative Residence Incorporated offers residence and apartment accommodation for graduate and undergraduate students. Total occupancy is 300 in residence, half male, half female, and 50 in apartments. Meals are provided, and non-residents are invited to eat at the Co-op Dining Rooms. The University of Toronto has no official connection with Campus Co-operative Residence, Inc., and inquiries should be addressed direct to Campus Co-operative Residence Inc., 395 Huron Street, Toronto 5, Ontario, telephone 921-3168 (area 416).

Rochdale College operates on a co-operative system and offers student accommodation of varying forms: single and double rooms, suites and apartments. Total accommodation is about 850, male and female, and the building includes a cafeteria. Rochdale College has no official connection with the University of Toronto, and all enquiries should be addressed to Rochdale College Reservations Office, 395 Huron Street, Toronto 5, telephone 921-3168 (area 416).

LICENSURE

A diploma in Dental Hygiene does not, of itself, confer the right to practise. A candidate desiring to practise dental hygiene in Canada should consult the appropriate licensing body listed below:

Alberta—Registrar, Alberta Dental Association, 9901 – 108 Street, Edmonton, Alberta.

British Columbia—Registrar, College of Dental Surgeons of British Columbia, 325 Medical-Dental Building, 925 W. George Street, Vancouver 1, B.C.

Manitoba—Registrar, The Manitoba Dental Association, 308 Kennedy Street, Winnipeg 2, Manitoba.

New Brunswick—Registrar, College of Dental Surgeons of New Brunswick, 99 Fraser Street, Nashwaaksis, N.B.

Newfoundland—Registrar, Newfoundland Dental Association, Campbell Building, 350 Water Street, St. John's, Nfld.

Nova Scotia—Registrar, Provincial Dental Board of Nova Scotia, 2169 Cottingen Street, Halifax, N.S.

Ontario—Registrar-Secretary, Royal College of Dental Surgeons of Ontario, 230 St. George Street, Toronto 5, Ontario.

Prince Edward Island—Registrar, The Dental Association of Prince Edward Island, 129 Kent Street, Suite 305, Charlottetown, P.E.I.

Quebec—Registrar, College of Dental Surgeons of the Province of Quebec, 801 Est, Rue Sherbrooke, Montreal 24, P.Q.

Saskatchewan—Registrar, The College of Dental Surgeons of Saskatchewan, 606 Canada Building, Saskatoon, Saskatchewan.

CALENDAR 1970

January

S	M	T	W	T	F	S
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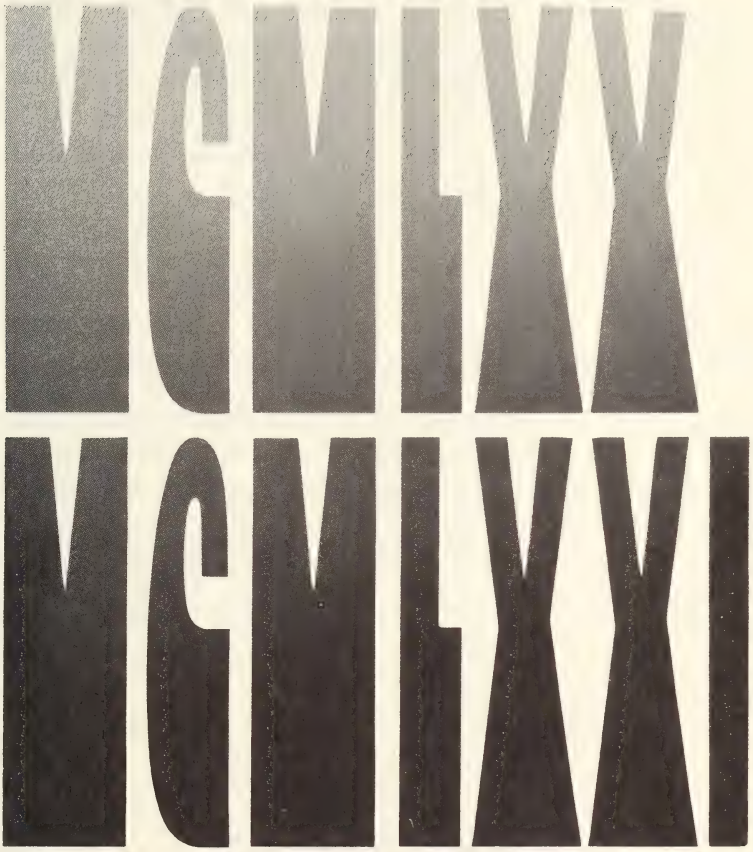
The College of Education
University of Toronto
Calendar 1970–71



In view of increasing costs of supplies and labour, fees, residenc dues and other charges set forth in this Calendar are subject t changes by the Board of Governors.

Enquiries concerning courses at The College of Education shoul be addressed to the Registrar, The College of Education, 371 Bloo Street West, Toronto 181.

University of Toronto Press 1970

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Historical Note

When secondary education in Upper Canada was officially introduced in 1807, qualifications for teachers were ill-defined and professional training was non-existent. Nevertheless, a surprising number of 'educated gentlemen' found their way into the classrooms of the District Grammar Schools. Unfortunately, the supply of these superior pedagogues failed to keep pace with the growth of the population and the subsequent increase in schools. But in spite of the difficulties encountered, no serious attempt to provide teacher training was made for more than half a century.

Beginning in 1858, a number of experiments involving model schools and training institutes was conducted with the aim of improving the academic and professional qualifications of teachers. None of these endeavours met with any widespread satisfaction.

In 1890, all such operations were abandoned with the founding of a provincial School of Pedagogy in Toronto. Seven years later, this institution was moved to Hamilton and renamed the Ontario Normal College.

In 1906, the training of secondary school teachers was modified drastically when Faculties of Education were organized at the University of Toronto and at Queen's University. In Toronto, the Faculty offered professional secondary school courses in Pedagogy. In order to improve the practical and experimental aspects of its program, the Faculty established, in 1910, a practice school, the University of Toronto Schools.

This pattern of teacher training continued until after the close of World War I. In 1920, it came to an abrupt end when the Faculty of Education at Queen's was discontinued and the Faculty in Toronto was designated as the Ontario College of Education, University of Toronto.

During the period since its inception, the Ontario College of Education has expanded its program, its services, its facilities, and has added a number of important departments: the Guidance Centre in 1945; the Vocational and Industrial Arts Department, in 1947; the Department of Advanced Academic Recommendation (now

known as the Committee on Advanced Standing), in 1957; and the Educational Media Centre, in 1966.

In 1966, the Departments of Graduate Studies and Research were transferred to the Ontario Institute for Studies in Education, with the result that the activities of those departments are now administered by the Institute.

In 1966, a new agreement for the operation of the Ontario College of Education was made between the Minister of Education and the University of Toronto, establishing a College Council and Advisory Board. By the same agreement, the name of the College was changed to *The College of Education, University of Toronto.*

During a period of forty-five years The College was the sole institution in the province for the preparation of secondary school teachers. In 1965, the situation altered with the opening of the Althouse College of Education, The University of Western Ontario. Since then Faculties of Education have been established at Queen's University, The University of Ottawa, and Lakehead University.

Today, The College of Education pursues its traditional rôle of training secondary school teachers and, in addition, trains a number of elementary school teachers. The College also administers the University of Toronto Schools and the Guidance Centre.

Academic Calendar, One-Year Program, 1970-71

	Autumn Term, 1970 September 21 to December 18
September 21	Registration, 9 a.m.
October 5	Last date for changing optional subjects
October 12	Thanksgiving Day
November 11	Remembrance Day
December 31	Last day for accepting applications for supplemental practical tests
	Winter Term, 1971 January 4 to April 8
January 20	Last day for receiving the second instalment of fees
March 22 to 26	Mid-term break
April 9	Good Friday
	Spring Term, 1971 April 13 to May 14
April 13 to May 14	Final Examinations
May 28	Start of University Commencement
June 24	Last day for accepting applications for supplemental written examinations

Academic Calendar, Summer Session, 1970

ıne 29 to July 31	Business and Commerce Summer Sessions for Intermediate Accountancy, Data Processing, Marketing and Secretarial, Parts I, II and Specialist
uly 6 to July 10	Business and Commerce, Updating Courses
ne 29 to July 31	Commercial-Vocational Five-Week Summer Session (C2)
ne 29 to July 31	Commercial-Vocational Five-Week Summer Session (C3)
ne 29 to July 31	Commercial-Vocational Completing Session (C2)
ne 29 to July 31	Commercial Second and Third Summer Sessions for Commercial-Vocational Teachers (C3)
29 to August 14	High School Assistants' Completing Seven-Week Summer Session
29 to August 7	High School Assistants' Summer Session for Teachers with Professional Education
29 to August 7	High School Assistants' Type A Summer Session
29 to August 14	Home Economics Summer Session, Intermediate, Part II
29 to August 7	Home Economics Summer Session, Intermediate, Parts III and IV
29 to August 14	Industrial Arts Summer Session, Elementary, Part I
e 29 to July 31	Industrial Arts Summer Session, Elementary, Parts II and III
e 29 to July 31	Industrial Arts Summer Session, Intermediate, Parts II and III
e 29 to July 31	Industrial Arts Summer Session, Specialist, Parts I, II and III
29 to August 14	Occupational, Type B (Practical Subjects), Professional Program Summer Session, Initial and Completing
29 to August 7	Occupational, Type B (Practical Subjects), Trades Program Summer Session, Parts I and II
e 29 to July 31	Occupational, Type A (Practical Subjects), Summer Session, Parts I and II
ly 6 to July 31	Outdoor Education Course
29 to August 7	Physical and Health Education (Women) Summer Session, Intermediate, Parts I and II
29 to August 7	Physical and Health Education (Women) Summer Session, Specialist
29 to August 7	Physical and Health Education (Men) Summer Session, Intermediate, Parts I and II
29 to August 7	Physical and Health Education (Men) Summer Session, Specialist
29 to August 7	Physical and Health Education Special Summer Session for Teachers of Physical Education for Girls
29 to August 7	School Librarianship Summer Session, Specialist
9 to August 14	Vocational, Type B, Summer Session, Initial and Completing
9 to August 14	Vocational, Type B, Summer Session, for holders of High School Assistant's Type B Certificates
29 to July 31	Vocational, Type A, Summer Session, Parts I and II

University Administrative Officers 1969-70

President	C. T. Bissell, M.A., PH.D., D. ès L., D.LITT., LL.D., F.R.S.C.
Assistant to the President	N. S. C. Dickinson, C.D., B.A.
Executive Vice-President (Academic) and Provost	J. H. Sword, M.A.
Vice-Provost and Executive Assistant to the President	D .F. Forster, B.A., A.M.
Executive Vice-President (Non-Academic)	A. G. Rankin, B.COM., F.C.A.
Executive Assistant to the Executive Vice-President (Non-Academic)	J. F. Brook
Vice-President (Administration)	F. R. Stone, B.COM., F.C.A.
Secretary of the Board of Governors	D. S. Claringbold
Director of Administrative Services	M. A. Malcolm, B.A.
Director of Physical Plant	F. J. Hastie, B.SC., P.ENG.
Director of Finance	(to be appointed)
Vice-President (Health Sciences)	J. D. Hamilton, M.D., F.R.C.P.(C.)
Vice-President (Research Administration)	G. de B. Robinson, M.B.E., B.A., PH.D., F.R.S.C.
Director of the Office of Research Administration	Miss S. Dymond, B.A., Q.C.
Vice-President and Registrar and Secretary of the Senate	R. Ross, M.B.E., M.A.
Executive Assistant to the Vice-President and Registrar and Assistant Secretary of the Senate	W. Kent, M.A.
Vice-President and Graduate Dean	E. Sirluck, M.B.E., M.A., PH.D., LL.D., F.R.S.C.
Chief Librarian	R. H. Blackburn, M.A., B.L.S., M.S., LL.D.
Director of University Extension	G. H. Boyes, M.A.

Director of Admissions	E. M. Davidson, B.A.
Director of Student Awards	Miss H. L. Reimer, B.A., B.PED.
econdary School Liaison Officer	W. A. Hill
irector of Statistics and Records	J. M. Tusiewicz, M.A.SC., M.B.A.
Director of University Health Service	G. E. Wodehouse, M.C., M.D., F.R.C.P.(C.), M.R.C.P.
Assistant Director of University Health Service – Women	Miss F. H. Stewart, B.A., M.D.
ector of Career Counselling and Placement Centre	A. W. Headrick, M.A.
Director of International Student Centre	Mrs. K. Riddell, B.A.
irector of the Advisory Bureau	D. J. McCulloch, B.A., M.D., D.PSYCH., F.R.C.P.(C.)
Director of Housing Service	Mrs. M. G. Jaffary, B.A.
Director of University of Toronto Press	M. Jeanneret, B.A., LL.D.
Director of Information	K. S. Edey
Director of Alumni Affairs	J. C. Evans, B.A.
Director of Development	R. L. Jones
Warden of Hart House	E. A. Wilkinson, B.A.
Director of Athletics and Physical Education – Men	W. A. Stevens, B.S.
Director of Athletics and Physical Education – Women	Miss A. Hewett, B.ED., P.E.

The College of Education Administrative Staff 1970-71

Dean	D. F. Dadson, B.A., B.ED.
Assistant Dean	H. O. Barrett, C.D., B.A., D.PAED., F.O.T.F.
Director of the Department of Technical and Industrial Arts	A. W. Frizzell, B.A.SC., P.ENG.
Assistant Directors of the Department of Technical and Industrial Arts	F. E. Mason, B.A. T. H. G. Luther, M.A., B.ED.
Director of the Department of Business and Commerce	A. P. Seggie, B.A.
Director of Practice Teaching	J. W. Dodd, B.A.
Assistant Directors of Practice Teaching	W. G. London, B.A. R. Cairns, B.A.
Associate Director of Practice Teaching (Technical and Industrial Arts)	D. J. Long, B.A.
Director of the Guidance Centre	C. L. Bedal, B.A., M.ED.
Director, Committee on Advanced Standing	J. S. Carlisle, B.A., B.PAED.
Librarian	Miss M. Shortt, B.A., M.L.S.
Registrar	Miss A. A. L. Elliott, B.A.
Assistant Registrar	G. A. Whyte, B.A., B.J.
Nurse	Mrs. K. O. May, B.A., B.S., R.N.
Office Manager and Administrative Assistant	G. Mitchell

Teaching Staff 1970-71
High School Assistants' Program

Administration and Program Development

Professor A. S. Nease, M.A., F.C.C.T.
Professor J. W. Greig, B.A., ED.D.
Associate Professor V. K. Gilbert, B.SC., M.ED.
Lecturer K. M. Marjoribanks, B.SC., B.A., M.ED.
Lecturer J. D. Wood, M.A., A.R.C.T.

Art

Professor P. H. Taçon, B.A., B.PAED., M.A.

Business and Commerce

Professor A. P. Seggie, B.A.
Associate Professor J. H. Dool, B.A.
Associate Professor G. A. Reid, B.COM., B.ED., M.A., F.C.C.T.
Associate Professor R. B. Wilson, B.COM.
Assistant Professor B. E. Conchie, B.A.
Assistant Professor D. W. Garth, B.COM.

Computer Studies

Associate Professor L. J. La Fave, B.ED., M.B.A.
Associate Professor C. C. Brodeur, M.A., PH.D.
Assistant Professor G. D. Milbrandt, B.S.ED.

Classics

Professor B. C. Taylor, M.A.
Lecturer K. E. Prentice, M.A.

Economics and Political Science

Assistant Professor J. D. Thexton, M.A.

Educational Media

Professor D. A. Clee, B.A., M.SC., F.R.G.S.
Lecturer Miss E. Crampton, L.U.D., C.S.T.D., I.P.C.

Educational Psychology

Professor H. O. Barrett, C.D., B.A., D.PAED., F.O.T.F.
Associate Professor C. C. Brodeur, M.A., PH.D.
Associate Professor R. W. Dent, M.A., PH.D.

Associate Professor	S. L. Kong, B.A., M.ED., PH.D.
Associate Professor	W. V. Trott, M.A.
Assistant Professor	Mrs. Conchita Tan-Willman, B.S.E., M.A., PH.D.
Assistant Professor	A. J. Zimmerman, B.A., M.ED.

Elementary Education

Professor	G. E. Tait, B.A., B.PAED., ED.D.

ENGLISH DEPARTMENT

Associate Professor	Mrs. Johan Aitken, M.A.
Assistant Professor	A. A. Bowers, B.A.

GEOGRAPHY DEPARTMENT

Associate Professor	W. E. Sager, C.D., B.A., F.A.G.S.
Associate Professor	A. Balins, M.A.
Associate Professor	Mrs. Una Elliott, B.A., M.A., B.ED.

MATHEMATICS DEPARTMENT

Professor	W. B. MacLean, B.A., M.A.
Associate Professor	D. L. Mumford, B.A.
Assistant Professor	D. W. Alexander, B.A., B.ED.
Assistant Professor	F. Ebos, B.SC., M.SC.
Assistant Professor	D. L. Fraser, B.SC., B.ED.
Assistant Professor	H. L. Ridge, B.SC.

MUSIC DEPARTMENT

Assistant Professor	Mrs. Natalie Kuzmich, MUS.BAC., M.A.

PHYSICAL AND HEALTH EDUCATION DEPARTMENT

Professor	J. H. Passmore, B.A., B.P.H.E., B.ED.
Associate Professor	J. R. Life, B.P.H.E., M.ED.

SCIENCE DEPARTMENT

Associate Professor	W. A. Andrews, M.SC., B.ED.
Associate Professor	R. G. Casson, B.SC.
Associate Professor	H. M. Lang, B.A.
Assistant Professor	T. J. E. Wolfe, B.S.A.
Lecturer	J. F. Eix, B.SC.

TECHNICAL AND INDUSTRIAL ARTS DEPARTMENT

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Associate Professor	Mrs. Johan Aitken, M.A.
Associate Professor	A. C. Coman, M.A.
Associate Professor	J. W. MacDonald, M.A., ED.D.
Associate Professor	R. T. Shephard, B.A.

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Assistant Professor	Miss Joan Laird, B.A.
Assistant Professor	K. J. Weber, B.A.

Geography

Associate Professor	W. E. Sager, C.D., B.A., F.A.G.S.
Associate Professor	R. P. Baine, M.A.
Associate Professor	A. Balins, M.A.
Associate Professor	Mrs. Una Elliott, B.A., M.A., B.ED.

Guidance

Associate Professor	C. L. Bedal, B.A., M.ED.
Assistant Professor	B. R. Eardley, B.S., M.ED.
Assistant Professor	P. A. Manuel, B.A., M.ED.

History

Professor	J. C. Ricker, M.A.
Professor	A. D. Lockhart, M.A.
Associate Professor	R. W. P. Bowles, M.A.
Associate Professor	J. E. Cruickshank, M.A.
Associate Professor	G. Smith, M.A.
Assistant Professor	L. R. Hill, M.A.
Assistant Professor	G. A. Whyte, B.A., B.J.

History, Philosophy, Sociology of Education

Professor	J. M. Paton, M.A., D.PAED., F.C.C.T.
Professor	A. F. Skinner, M.A., B.SC., PH.D., F.E.I.S.
Associate Professor	G. W. Bancroft, B.A., M.ED., PH.D.
Assistant Professor	T. W. Goodenough, B.A., M.A.
Assistant Professor	D. A. MacIver, B.A., M.ED., DIP.ED.
Assistant Professor	L. Stott, B.ED.

Home Economics

Associate Professor	Miss Helen Finnegan, B.A., M.S.
Assistant Professor	Miss Audrey Warner, B.A., M.SC.
Assistant Professor	Miss Annette Yeager, B.H.SC., M.ED.

Industrial Arts

Assistant Professor	R. Sramek, B.A.

Mathematics

Professor	W. B. MacLean, B.A., M.A.
Professor	K. O. May, A.B., M.A., PH.D.
Professor	W. W. Sawyer, B.A., M.A.
Associate Professor	D. L. Mumford, B.A.
Assistant Professor	D. W. Alexander, B.A., B.ED.
Assistant Professor	F. Ebos, B.SC., M.SC.
Assistant Professor	D. L. Fraser, B.SC., B.ED.
Assistant Professor	H. L. Ridge, B.SC.

Modern Languages

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Associate Professor	G. A. Kirk, M.A., DIP.D'E.
Associate Professor	R. R. A. Roy, B.A., B.PHIL., M.A.
Associate Professor	C. R. Theodore, M.A.
Assistant Professor	H. Hainsworth, M.A.
Lecturer	E. F. James, M.A.
Special Lecturer in Spanish	A. M. Gordon, A.M., PH.D.
Special Lecturer in Italian	Mrs. M. Kuitunen, DOTT. IN LETT., M.A., PHIL.M.
Special Lecturer in Russian and German	Mrs. G. J. Leech, DOC.PHIL.
Special Lecturer in French	Mme. M. Léon, L. ès L., D.E.S.
Special Lecturer in French	H. G. Schogt, M.A., PH.D.

Music

Assistant Professor	Mrs. Natalie Kuzmich, MUS.BAC., M.A.

Physical and Health Education

Professor	J. H. Passmore, B.A., B.P.H.E., B.ED.
Associate Professor	J. R. Life, B.P.H.E., M.ED.
Associate Professor	Miss Jean M. Stirling, B.A., DIP.P.H.E.
Assistant Professor	Mrs. Janet Armstrong, M.A.
Assistant Professor	D. F. Fawcett, B.P.H.E., M.A.
Assistant Professor	R. C. Goode, M.A., B.P.H.E., PH.D.

Psychology and Sociology

Professor	H. O. Barrett, C.D., B.A., D.PAED., F.O.T.F.

School Librarianship

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Assistant Professor	Miss Fay Blostein, B.A., B.L.S.

Science

Professor	A. H. Louden, B.A., B.PAED.
Associate Professor	R. G. Casson, B.SC.
Associate Professor	W. A. Andrews, M.SC., B.ED.
Associate Professor	H. M. Lang, B.A.
Assistant Professor	T. J. E. Wolfe, B.S.A.
Lecturer	J. F. Eix, B.SC.

Theatre Arts

Associate Professor	J. C. W. Saxton, B.A., M.A.(OXON.)
Assistant Professor	G. D. Wagner, B.A.

Teaching Staff 1970-71
Technical and Industrial Arts Program

Administration and Program Development

Professor A. S. Nease, M.A., F.C.C.T.
Professor J. W. Greig, B.A., ED.D.

Art

Professor P. H. Taçon, B.A., B.PAED., M.A.

Educational Psychology

Associate Professor T. H. G. Luther, B.A., B.ED., M.A.

English

Associate Professor C. H. Wall, B.A., B.ED., M.A.
Assistant Professor G. R. Burfield, B.A.

History of Vocational Education

Assistant Professor I. T. Malloch, B.A.

Home Economics

Associate Professor Miss Helen Finnegan, B.A., M.S.

Industrial Arts

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Associate Professor E. P. Emerson, B.A., M.ED.
Associate Professor W. S. Sloan, B.A., A.O.C.A
Associate Professor R. W. Wilson, B.SC., M.I.E.E.
Assistant Professor R. Sramek, B.A.
Lecturer P. J. Briggs
Lecturer J. G. A. Jameson
Lecturer C. Otto, B.A.

Mathematics

Assistant Professor D. W. Alexander, B.A., B.ED.

Principles of Teaching

Professor A. W. Frizzell, B.A.SC., P.ENG.
Professor F. E. Mason, B.A.
Associate Professor D. J. Long, B.A.

Assistant Professor	A. Gaydos, B.A., M.ED.
Assistant Professor	I. T. Malloch, B.A.
Assistant Professor	W. J. Watson, B.A.
Lecturer	H. J. Taylor, B.A.

Technical Subjects

Associate Professor	D. J. Long, B.A.
Assistant Professor	W. J. Watson, B.A.
Lecturer	C. Otto, B.A.
Lecturer	H. J. Taylor, B.A.

Technical Proficiency Examinations

Director	E. Gascoigne, P.ENG.

Staff of The University of Toronto Schools 1970-71

Headmaster	W. B. MacMurray, B.A., B.PAED.
Assistant Headmaster	C. D. S. Bate, B.A.SC., M.ED.
Art	D. F. Boutros, B.A.
Classics	E. J. Collins, B.A., B.PAED.
	H. C. Maynard, B.A.
	K. E. Prentice, M.A.
English	S. H. Bull, M.A.
	H. D. Gutteridge, M.A.
	W. R. H. Montgomery, M.A., PH.D.
	C. W. Weir, M.A.
Guidance	E. J. Collins, B.A., B.PAED.
History	D. A. Kearn, B.A., B.ED. (on leave of absence)
	R. J. Stewart, B.A.
Mathematics	G. A. Fleming, B.A., M.ED.
	N. D. Fox, B.COM.
	J. A. Vanstone, B.A.
Modern Languages	P. F. L. Gallant, B.A.
	F. W. Ignatz, B.A.
	R. J. Moorfield, B.A.
	W. A. Stickland, B.A.
Music	G. F. FitzGerald
Physical and Health Education	W. M. Simons, B.P.H.E., DIP.P.E.
	J. Stulac, B.P.H.E., B.A.
Science	C. E. B. LeGresley, B.A.
	F. M. Speed, B.SC., B.SC.S., B.ED.
Librarian	L. H. Newell, B.A.
Assistant Librarian	J. F. Teerkott, B.A.

General Information

1. Location of The College of Education

The College of Education is located at the corner of Bloor Street West and Spadina Avenue, in the northwest sector of the St. George Campus, University of Toronto. Mailing address of the College is 371 Bloor Street West, Toronto 181.

2. Function of The College of Education

The basic function of The College of Education is the training of teachers for professional service in elementary and secondary schools, especially in the schools of Ontario. Programs of The College provide courses leading to *basic certificates* required for teaching in the high schools, collegiate institutes, vocational schools and elementary schools of Ontario. Other College courses lead to *additional certificates* in areas of subject specialization. The College itself does not grant teaching certificates. These are issued by the Ontario Department of Education on the recommendation of The Council of The College. With the exception of skilled tradesmen and some others taking Vocational courses, students in The College of Education are required to hold acceptable university degrees.

llege Facilities

The College of Education is equipped with classrooms, lecture rooms, library, laboratories and gymnasia, an Educational Media Centre with a television studio and mobile television unit, language laboratories, a theatre studio, a data processing centre and a typing laboratory.

4. The College Library

Students will find in the Library a major collection of books and periodicals on all aspects of secondary and elementary education, as well as small working collections on the various subjects taught in Ontario schools. In addition to its loan facilities, the Library provides a reference service to assist students in locating information on teaching methods, educational psychology and school management, and to familiarize them with the chief sources in Canada and elsewhere from which material on education may be obtained.

The Library's selected collection of mounted pictures, filmstrips, film loops, slides, recordings and document kits is available to the students for use both in demonstration lessons at The College and in their practice teaching assignments at outside schools. Facilities for previewing these teaching aids are provided in the Library.

Students at The College are entitled to use the main University of Toronto Library, where they can obtain extensive material on subjects other than education.

5. University Facilities

Students registered for courses in The College of Education may use the University's athletic facilities, and Hart House, under such conditions as obtain with other students. They will also be admitted to the Royal Ontario Museum, 100 Queen's Park, and to the Toronto Art Gallery, Dundas Street, from 9 a.m. to 5 p.m., on presentation of their Admit to Lecture cards.

6. Health Centre

The Health Centre, in charge of a registered nurse, offers to students first aid, counsel with health problems, and referrals to doctor, dentist, or hospital as appropriate. The Centre is open each week during the session, Monday through Friday, from 8.30 a.m. to 4 p.m.

7. The University Health Service

Any student may consult a staff physician at the Health Service 9 a.m. to 5 p.m., Monday to Friday, and 9 a.m. to 12.30 p.m. (Men) and 12 noon (Women) Saturday, while the University is in session. The University does not accept any responsibility for injuries sustained by students while engaged in Physical Education classes or in University athletic activities, but through the Health Service provides for treatment within the following limits: minor injuries are treated at its offices; treatment for more serious injuries will be provided if such treatment is given under the direction and care of staff retained by the Health Service. Treatment is limited to students who suffer accidents while engaged in and which arise out of University Physical Education classes and athletic activities.
Health Service (Men), 256 Huron Street, 928-2459
Health Service (Women), 256 Huron Street, 928-2456

8. Housing Service

The University of Toronto maintains a listing of rooming houses, flats, apartments and homes. Information on these may be obtained through the Housing Service office at 49 St. George Street, Toronto 181.
Off-campus housing of this nature is not subject to University regulation, but every effort is taken to make the information as complete as possible. Students are encouraged to assist in this effort by reporting on the quality of the accommodation they have occupied.
A limited amount of accommodation is offered in exchange for part-time services such as housekeeping or babysitting.

9. St. Andrew's University Day Nursery

This day nursery, established and supported by the University of Toronto, the Graduate Students' Union and the Students' Administrative Council, provides pre-school education and day care

facilities for children of University of Toronto students. Children aged two to five years are accepted.

The nursery, located at St. Andrew's United Church, 117 Bloor Street East, is well equipped and staffed, and is licensed under the Day Nursery Act, Province of Ontario. It operates from 8.30 a.m. to 5.45 p.m. throughout the winter and summer academic sessions. Fees are reasonable, and noon meals and morning and afternoon snacks are provided. Information may be obtained from the nursery (telephone 921-7078) or from the School of Graduate Studies.

0. University of oronto Schools

The University of Toronto Schools, established in 1910 as a division of The College of Education, is a day school for boys from Grades 7 to 13. The normal enrolment is 420 students selected by competitive examinations from among a large number of applicants. Each year classes are admitted to Grades 7 and 9 respectively to replace the class graduating from Grade 13. The Ontario curriculum leading to university entrance is provided, with opportunities for enrichment, acceleration, independent study, and experimentation. The annual tuition fee is $300.00. The resources of the school are available to staff and students of The College for teaching practice, demonstration, and experiment.

11. Tuition and Other Fees

Fees for the High School Assistants' Program and Technical and Industrial Arts Programs of the One-Year Session:

Academic Fee	Men $200	Women $200
Incidental Fees	Men $ 57	Women $ 32
Total Fees (if paid in one instalment)	Men $257	Women $232
First Term Instalment, due October 1	Men $157	Women $132
Second Term Instalment, due January 20	Men $103	Women $103

NOTES:

1 The Academic Fee (which includes the examination and University Library fees) and the Incidental Fees are to be paid to the *University of Toronto* according to instructions on the *Fees Form* obtained from the Registrar.

2 The fee for students attending the Session after Christmas is $100 plus Incidental Fees.

3 Incidental Fees include the following:

For Men – Hart House; Students' Administrative Council; Athletic; Health Service; and such medical examinations as may be required for admission to The College.

For Women – Students' Administrative Council; Athletic; Health Service; and such medical examinations as may be required for admission to The College.

4 An additional charge of $3 is made for payment of fees in two instalments.

5 After January 20, an additional deferred payment fee of $3 per month shall be imposed until the whole amount has been paid.

6 There is no additional fee for the High School Assistants' Program, Type A, or for courses leading to additional certificates when taken concurrently with the High School Assistants' Program, Type B.

7 Admission acceptances sent out on June 1, 1970, or earlier, must be confirmed in writing by the applicant to the Registrar of The College of Education by June 15, 1970, accompanied by a non-refundable deposit of $25.00 payable to the University of Toronto by certified cheque or money order. This deposit will be applied to the applicant's academic fee.

For Supplemental Examinations:	
Fee for each supplemental examination in one subject of any course, except High School Assistants', Type A	$ 10
Fee for the supplemental examination(s) for any High School Assistant's Type A Certificate	$ 20
For Summer Sessions:	
High School Assistants' Completing Summer Session	$120
Completing Summer Session, Special Student, each subject	$ 50
Summer Session for Teachers with Professional Education	$155
Type A Seminars, Summer Session	$100
Business and Commerce Summer Sessions:	
Intermediate, Parts I and II, each	$ 75
Specialist	$ 75
Commercial-Vocational, each	$ 75
Commercial Examinations, per subject	$ 10
Intermediate Home Economics Summer Sessions:	
Intermediate, Parts II, III and IV, each	$ 75
Industrial Arts Summer Sessions:	
Elementary, Parts I, II and III	$ 75
Intermediate, Parts I, II and III, each	$ 75
Specialist, Parts I, II and III, each	$ 75
Vocational and Occupational Summer Sessions:	
Type B for holders of H.S.A., Type B, Certificates	$100
Type B, Parts I and II, each	$150
Type A, Parts I and II, each	$ 75
Occupational Trades, Two-week Sessions, each	$ 25

School Librarianship Summer Session:	
Specialist	$100
Physical and Health Education Summer Sessions:	
Intermediate Parts I and II (Men and Women), each	$ 75
Specialist (Men and Women), each	$100
Special Course for Teachers of Physical Education for Girls	$ 75

An extra fee may be charged for an Outdoor Education Course, taken in conjunction with a Physical and Health Education Course.

NOTES:

The Incidental Fees required of students in the One-Year Program shall not be required of students in the Summer Session.

A candidate who applies after the last date for application to any course listed in this Calendar will be assessed a late fee of $20 if the candidate is admitted to the course.

A candidate who withdraws before the end of his course will be charged fees in proportion to the period of his attendance, i.e. up to the date of notice of his withdrawal.

12. Language and Medical Regulations

Facility in English. For a candidate whose first language is other than English a requirement for admission will be a Communication Test for Teaching in the English Language. The test will be conducted by a Committee composed of representatives of the Ontario Secondary School Teachers' Federation, the Department of English of the University of Toronto, and The Council of The College. Arrangements for the test will be made by the Registrar's Office, The College of Education.

The College is prepared to consider other evidence that may be submitted to the Registrar for evaluation.

Physical Unfitness of Candidates. On the Dean's report to the Minister of Education as to the physical unfitness of a student for training as a teacher, the Minister may require a special medical examination of such student, and, as a result thereof, may direct that he be not eligible for recommendation for a departmental certificate.

13 Student Affairs

The Student Union of The College of Education

The members of the student body of The College of Education are drawn from most of the colleges and universities located across Canada. In addition, many students come from American and European universities.

The Union's functions embrace many facets of life about The College – musical, dramatic, journalistic, social, athletic, and extra-curricular. Of prime importance is the fact that members of the Union are represented on The Council of The College and its Committees.

14. One-Year Programs Offered in 1970-71

The College will offer One-Year Programs leading to the followin Department of Education Certificates, as well as to the Bachelo of Education Degree:

1 Interim High School Assistant's, Type B (See Sections 24–29)
2 Interim High School Assistant's, Type A (See Sections 31–34)
3 Art (See Sections 36–38)
4 Business and Commerce (See Sections 33–38)
5 Elementary School (See Sections 40–42)
6 Guidance (See Sections 36–38)
7 Home Economics (See Sections 36–38)
8 Industrial Arts (for High School Assistants) (See Sections 36–38, 89–92)
9 Industrial Arts (Intermediate and Specialist) (See Sections 89–92
10 Music (See Sections 36–38)
11 Occupational, Type B (Practical Subjects) (See Sections 74–75)
12 Occupational, Type A (Practical Subjects) (See Sections 74, 75, 78)
13 Physical and Health Education (See Sections 36–38)
14 School Librarianship (See Sections 36–38)
15 Theatre Arts (See Sections 36–38)
16 Vocational, Type B (See Sections 73–78)
17 Vocational, Type A (See Sections 73, 75, 78)
18 Vocational Home Economics (See Section 77)

NOTE:
Details of courses included in the High School Assistants' Program and Programs for Additional Certificates are found in Section 44–71. Details of courses included in Technical and Industrial Art Programs are found in Sections 80–97.

15. Summary of Secondary School Certificates

Listed below are the teaching certificates required for various purposes in the secondary schools of Ontario.

Certificate	*Subjects Taught by Certificate Holders*
Interim High School Assistant's Certificate, Type B	Academic and General Subjects
Interim High School Assistant's Certificate, Type A	Academic and General Subjects
Interim Vocational Certificate, Type B	The Vocational Subject named on the Certificate
Interim Vocational Certificate, Type A	The Vocational Subject named on the Certificate
Interim Occupational Certificate, Type B (Practical Subjects)	Occupational (Practical Subjects)
Interim Occupational Certificate, Type A (Practical Subjects)	Occupational (Practical Subjects)

Interim Intermediate Industrial Arts Certificate	Industrial Arts Subjects
Specialist Industrial Arts Certificate	Industrial Arts Subjects
Interim Intermediate Certificate in Accountancy, Data Processing, Marketing, or Secretarial	Business and Commercial Subjects
Interim Specialist Certificate in Accountancy, Data Processing, Marketing, or Secretarial	Business and Commerce Subjects
Interim Commercial-Vocational Certificate, Type B (Commercial Subjects named)	Business and Commerce Subjects

NOTE:
1 For *additional certificates*, see Sections 36–38.
2 For *Elementary School Teacher's Certificate*, see Section 40.

16. Interim and Permanent Certificates

Any Department of Education certificate, when first awarded, is an interim certificate made permanent after a period of successful teaching as defined in regulations of the Department.

Interchange of Ontario Teaching Certificates, Elementary and Secondary

1 The holder of a Permanent Elementary School Teacher's Certificate, Standard 4, may, upon accepting a contract from a board to teach in a secondary school, be granted an Interim High School Assistant's Certificate, Type B.

2 The holder of a Permanent High School Assistant's Certificate may, upon accepting a contract from a board to teach in an elementary school, be granted an Interim Elementary School Teacher's Certificate, Standard 4.

3 The holder of a Permanent High School Assistant's Certificate, who meets the Department of Education requirements for Vocational Certification, may, upon accepting a contract from a board to teach a Vocational Technical course of a secondary school, be recommended for an Interim Vocational Certificate, Type B, upon successful completion of one seven-week summer session.

4 The holder of a Permanent Vocational Certificate, a Permanent Occupational Certificate (Practical Subjects) or a Permanent Commercial-Vocational Certificate, who has a university degree acceptable for admission to the Type B course at a College of Education, may, upon receiving an assignment to teach the academic classes of a secondary school, be granted an Interim High School Assistant's Certificate, Type B.

5 It is expected that most transfers referred to in (1) and (2)

above will take place in the case of teachers teaching in the general range of Grades 7 to 10. Persons transferring to teach in grades beyond this range are advised to take summer courses which will help them to adjust to the new duties.

NOTE:
The above information regarding interchange of Certificates is found in the Department of Education's Circular 43.

18. Endorsement of the High School Assistant's Certificate, Type B

The holder of a High School Assistant's Certificate, Type B, may have his certificate *endorsed* under the following conditions:

A candidate who has obtained second class standing or better in an approved university course to a total of 15 credits in one secondary school academic subject, or 24 credits (12 credits in each) in two related academic subjects, and who completes a year of successful teaching subsequent to the date of his Type B Certificate in such subject(s) is eligible for endorsement of his Type B Certificate.

The candidate must apply to the *Committee on Advanced Standing*, The College of Education, University of Toronto, for approval of his credits and subsequently to the appropriate Area or Municipal Superintendent, for endorsement.

19. Committee on Advanced Standing

The Committee on Advanced Standing gives rulings on academic standing to candidates who are seeking endorsement of the High School Assistant's Certificate, Type B, or who are applying for admission to a course leading to a High School Assistant's Certificate, Type A.

Written enquiries should be addressed to the Director, Committee on Advanced Standing, The College of Education, 371 Bloor Street West, Toronto 181.

20. Letter of Standing, Secondary School

A Letter of Standing entitling the holder to teach in an Ontario secondary school for one year will be granted by the Minister of Education to a university graduate from any country who can meet the following conditions:

1 that his university transcripts indicate that the holder has met the academic requirements applicable to Ontario graduates;

2 that his professional training fulfils the requirements of the Ontario Department of Education;

3 that a candidate from outside Canada may be required to meet the Special Committee in the Department of Education;

4 that he is either a Canadian citizen or has landed immigrant status, or has applied for Canadian citizenship.

An application for a Letter of Standing must be forwarded to: The Registrar, Ontario Department of Education, 1 St. Clair Avenue West, Toronto 195.

On the statement of the Principal that the candidate has taught

successfully for one year under the authority of a Letter of Standing, he may be recommended by the Area or Municipal Superintendent concerned for the Interim High School Assistant's Certificate, Type B.

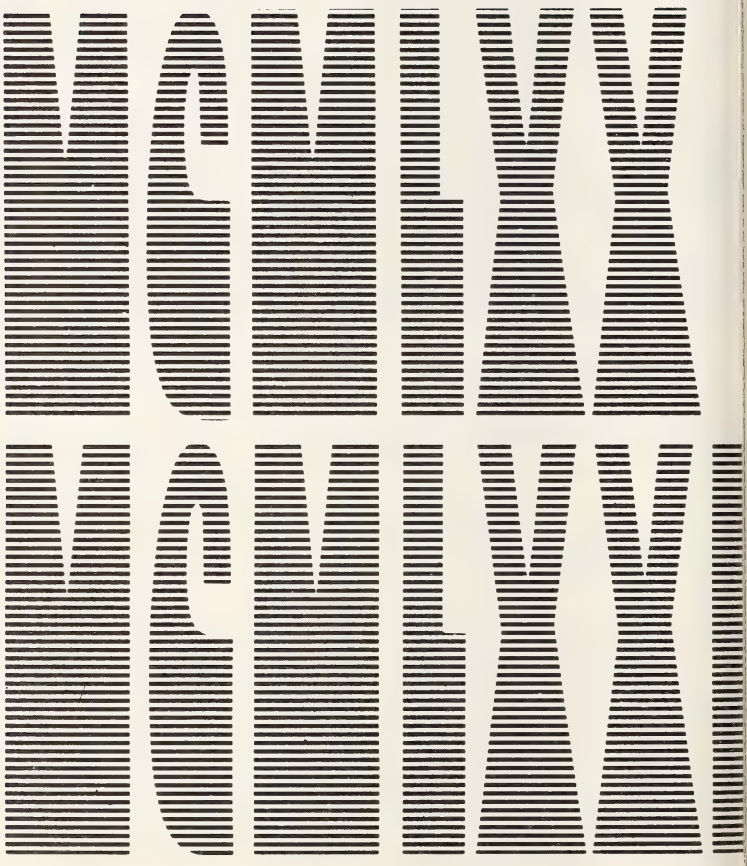
The Bachelor of Education Degree: Program for Graduates awarded the High School Assistant's Certificate Prior to May, 1970

Commencing May, 1970, graduates of the One-Year Program leading to the High School Assistant's Certificate, Type B, will be recommended also for the Bachelor of Education Degree. The program leading to the Bachelor of Education Degree for those holders of the High School Assistant's Certificate who were awarded the Certificate prior to May, 1970, is described in Section 72, page 69.

Supplemental Examinations and Appeals

No candidate will be permitted to take more than twice any final examination, or part thereof, for any certificate listed in this Calendar, except by permission of The Council of The College.

The answer papers of the final examinations of all unsuccessful candidates for provincial certificates are re-read by the examiners and the results of the first reading reconsidered before a decision to reject is reached. Despite this fact, any unsuccessful candidate for an interim certificate may have his case considered a third time if, before the end of the calendar year, he lodges with The Council of The College his appeal, with a statement of the grounds on which it is based, and with a fee of $10 in the form of a certified cheque or money order payable to the University of Toronto. The fee will be refunded if the appeal is sustained.



One-Year Program leading to the Bachelor of Education Degree and to the Interim High School Assistant's Certificate, Type B

23. Bachelor of Education Degree

The Degree of Bachelor of Education will be awarded to students on successful completion of the One-Year Program which leads also to the Interim High School Assistant's Certificate, Type B, awarded by the Ontario Department of Education.

24. The Type B Certificate

The Ontario High School Assistant's Certificate, Type B, is awarded by the Ontario Department of Education, and qualifies the holder to teach academic and general subjects in the secondary schools of Ontario. The Interim Certificate may become a Permanent High School Assistant's Certificate upon completion of two years' successful teaching experience in a secondary school in Ontario.

25. Admission Requirements

The basic requirement for admission to the program leading to the Bachelor of Education Degree, awarded by the University of Toronto, and to the Interim High School Assistant's Certificate, awarded by the Ontario Department of Education, is an approved university degree from an accredited university.

The candidate's university degree program must include at least 45 credits in Arts, Science or Commerce subsequent to Grade 13 (or equivalent).

The definition of credit is derived from the basic assumption that there are approximately 60 credits in a four-year course. From this it follows that 15 credits is equivalent to a university year; and a credit may be defined as one-fifteenth of a university year.

In general, then, one university course equals three credits.

An applicant for admission to the Program for a High School Assistant's Certificate, Type B, shall make application not later than June 1, to the Registrar, The College of Education, on an official form to be obtained from the Registrar. With the completed application form, the following must be submitted:

1 *A certificate of birth.* If not born in Canada, the candidate must submit a certificate from a competent authority that the candidate is a Canadian citizen, or has landed immigrant status, or has applied for Canadian citizenship. An applicant must be at least 20 years of age before October 1 of the year in which he applies for admission.

2 *An official transcript in duplicate* showing proof of graduation as

a Bachelor of Arts, Bachelor of Science, Bachelor of Commerce Bachelor of Applied Science, Bachelor of Household Science Bachelor of Music, or Bachelor of Physical and Health Education or other acceptable degree from a university, after a university course approved as to admission requirements and as to content o the undergraduate courses.

A candidate for admission to The College of Education is require to produce evidence of a negative tuberculin test reading or ches x-ray taken within the preceding year.

Admission acceptances sent out on June 1, 1970, or earlier, must b confirmed in writing by the applicant to the Registrar of The Colleg of Education by June 15, 1970, accompanied by a non-refundabl deposit of $25.00 payable to the University of Toronto by certifie cheque or money order. This deposit will be applied to the applicant' academic fee.

Limitation on Enrolment, 1970–71 In the 1970–71 One-Yea program leading to the Bachelor of Education Degree, enrolmen will be limited to 1300 students. Among applicants who have ful filled the admission requirements by June 1, 1970, preference wil be given to applicants with superior academic qualifications i teaching subjects for which there is a shortage of qualified teacher in Ontario secondary schools. It is expected that it will be possibl to notify an applicant shortly after June 1, 1970, whether or not place has been reserved for him.

26. Admission of Foreign Students

In a typical year, students from a dozen or more overseas countrie will be registered in The College of Education. A special effort i made to welcome qualified overseas students who plan to return t their own countries on completion of their studies, and to mee their special needs insofar as the resources of The College permit.

Foreign students and others *who are candidates for the Bachelo of Education degree but not for a teaching certificate of the Ontari Department of Education* must comply with such conditions o admission as The Council of The College may determine. One o the requirements may be a Communication Test for Teaching i the English Language (See Section 12).

27. Pre-College Observation Period

All those who intend to become students in the One-Year Progra of The College of Education are strongly advised to apply to th principal of a convenient secondary school for permission to spen a period in the observation of school organization, daily routin and teaching activities at the secondary school level. This perio of several days' duration prior to the opening of The College ter can be of genuine value to prospective teachers in acquainting the with problems of administration, instruction and student orientatio at the beginning of the school year.

28. Program of Studies, One-Year Session, leading to the Bachelor of Education Degree

Program of Studies, One-Year Session, leading to the Bachelor of Education Degree

Successful candidates with Canadian citizenship or landed immigrant status will be recommended to the Ontario Department of Education for the Interim High School Assistant's Certificate, Type B.

The program consists of four parts:
Part I Teaching Subjects
Part II Educational Theory
Part III Professional Practice
Part IV Additional Related Courses

Part I Teaching Subjects

Teaching Subjects

A candidate must elect at least two teaching subjects.

a Normally a candidate will be required to elect at least one of the following, for which the prerequisite is at least 2 university courses (6 credits):

English 417
French 436
Geography 418
History 424
Latin 432
Mathematics 434
Science 450

b As his second subject, the candidate may elect another subject from (a) or one of the following for which there is no prerequisite unless so indicated:

Art* 402 (6 university credits or background required)
Business and Commerce* 410
Economics 412 (9 university credits required)
Elementary School* 416
Geology 420 (9 university credits required)
German 436 (6 university credits required)
Greek 432 (6 university credits required)
Guidance* 422 (15 university credits required in Psychology, Sociology, Economics or related fields and at least 6 of these credits must be in Psychology)
Home Economics* 428 (variety of background required)
Industrial Arts* 430
Italian 436 (6 university credits required)
Music* 438 (6 university credits or background required)
Physical and Health Education* 442
Political Science 444 (9 university credits required)
Psychology and Sociology 446 (9 university credits required)
Russian 436 (6 university credits required)
School Librarianship* 448
Spanish 436 (6 university credits required)
Theatre Arts* 452

*Courses in these subjects lead to an additional Departmental certificate (See Section 38).

c *Business and Commerce*
A candidate may take two teaching subjects in Business and Commerce (See Section 47); and, on petition granted by The Council of The College, two subjects listed in (b).

d *Type A Candidates*
In selecting his subjects from (a) and (b), a candidate for the Interim High School Assistant's Certificate, Type A, must include the subject or subjects of the Type A Certificate.

e *Modern Languages*
A candidate should not choose a modern language unless he has oral proficiency in the language and a thorough knowledge of phonetics, grammar, and syntax.

f German, Greek, Italian, Russian, and Spanish may be elected only by a candidate for the High School Assistant's Certificate Type A, in these subjects, except by permission of The Council of The College.

g *Guidance*
Enrolment in the Guidance Course may have to be limited depending upon student demand, availability of staff and adequacy of accommodation. Those candidates who receive credit for this option, may, after one year of successful teaching experience in Ontario, be admitted into Part II of the Department of Education Guidance Course.

h *Physical and Health Education*
Part II of the Intermediate Course in Physical and Health Education or the Specialist Course in Physical and Health Education may be taken as a third option under conditions outlined in Section 38.

i *Theatre Arts*
Because of the nature of Theatre Arts, class size is limited.

j *Changes in Optional subjects*
The time limit for changing optional subjects will be two weeks from the date of registration, and thereafter only by the approval of The College Council.

Part II Educational Theory

Educational Theory

a All candidates will take the course Structural and Legal Bases of the Ontario School System 400.1

b In addition, a candidate must elect three courses from those offered by at least two of the departments as listed below:

Administration and Program Development 400
Program Development 400.2
The Individual Student and the School Program 400.3
Administration in the Modern School 400.4
Administration within the School System 400.5
Individual Research Project 400.6

Educational Psychology 414
Psychology Applied to Education 414.1
The Adolescent – At Home, in School and in the Community 414.2
Teaching – An Interpersonal Process I 414.3
Teaching – An Interpersonal Process II 414.4
Individual Research Project 414.5

History, Philosophy, Sociology of Education 426
Comparative Education 426.1
Dilemmas of Contemporary Education I 426.2(a)
Dilemmas of Contemporary Education II 426.2(b)
Modern Philosophy and Education 426.3
Progressive Education in Theory and Practice 426.4
School and Society 426.5
Sociology of Education 426.6
Values in Education 426.7
Individual Research Project 426.8

c On petition, granted by The Council of The College, a student may substitute a course from Part IV for one of the three courses required from Part II (b).

Part III Professional Practice

Professional Practice

Candidates will be assigned to approved elementary and secondary schools for observation and practice teaching for ten weeks during the session. There are two assignments of four weeks and a final assignment of two weeks. (See Academic Calendar, One-Year Program, page 6). Practice Teaching is conducted under the tutelage of appointed associate teachers in cooperation with the teaching subject departments of The College.

Any candidate absent from scheduled practice teaching duties may be required to make up the assignment at the end of the term.

Part IV Additional Related Courses

Additional Related Courses

These courses offer a candidate the opportunity to concentrate further on one of his teaching subjects by taking a related course, or to pursue an interest in another teaching subject or in the field of general education.

A candidate must elect one course from (a) or (b) below:

a *Administration and Program Development*
Teaching as a Profession 455.19
The School's Institutional Setting 455.20
Evaluation: Measuring Student Performance 455.25
Research Methods in Education 455.26

Computer Studies
Computers in Education 455.05
Educational Tests and Measurements 455.24

Educational Media
Educational Media 455.06

Educational Psychology
Introduction to Child Psychology 455.12
Principles of Programmed Learning 455.16

Elementary School
Art and Crafts for Elementary Schools 455.30
Music for Elementary Schools 455.31
Physical and Health Education for Elementary Schools 455.32
French at the Elementary School Level 455.21

English
Developmental Reading 455.27
The Language Arts of the Cinema 455.22

Geography
Curriculum Theory and Design 455.03
Game Theory and Simulation in Relation to Learning 455.10
Special Education for the Disadvantaged Learner 455.18

History, Philosophy, Sociology of Education
History of Education 455.11
Educational Issues in Perspective 455.28
Marxist Educational Theory 455.33

Mathematics
Research Project in Mathematics Education 455.23

Modern Languages
Applied Linguistics 455.01
Culture and Society as it relates to the teaching of French 455.
Culture and Society in German Language Teaching 455.02
Electronic Aids to Language Learning 455.07
French at the Elementary School Level 455.21

Physical and Health Education
Current Health Problems in North American Society 455.04
Outdoor Education 455.15

Science
Environmental Studies in Science 455.09

Technical and Industrial Arts
Introduction to Vocational, Occupational and Industrial A
Education 455.13

b On petition, granted by The Council of The College:
i a third teaching subject from Part I or a fourth course fro
Part II(b); or
ii a graduate or undergraduate course in another department
the University which is relevant to one of his teaching subjec
provided that arrangements can be made with the departme
concerned and there is no conflict with practice teaching. (A co
flict can be avoided by taking classes in the evenings or on Satu
days.) A candidate permitted to take such a course will be subje
to the regulations of the department for admission and cred

Tuition fees will be paid by The College. Candidates for such a course should apply to the Registrar, The College of Education, before August 1.

2. Conditions for Academic Standing

The standing of candidates will be determined by the combined results of term work and of the final examinations in the subjects of Parts I, II, and IV, and by the record of Observation and Practice Teaching in Part III.

Standing in the subjects of Parts I, II and IV will be issued as follows: A 80+, B 70–79, C 60–69, D 50–59, F below 50.

A student who obtains 50 per cent of the marks in each of the courses in Parts I, II, and IV and 50 per cent in each of the subjects taught in Part III may be recommended by The Council of The College for the Bachelor of Education degree and for the Interim High School Assistant's Certificate, Type B.

A student who passes in Part III and fails in not more than two of the courses included in Parts I, II, and IV, of which only one may be a teaching subject listed in Part I, may be exempted from further attendance, but will be required to write supplemental examinations in the courses failed. Other students who fail to obtain the necessary standing will be required to attend another one-year session, or the second half of the session (January to May).

A candidate who withdraws from attendance in any program listed in The College of Education Calendar may apply for re-admission in a subsequent year on petition to The Council of The College.

A candidate who fails in a one-year program listed in The College of Education Calendar may be re-admitted in a subsequent year, with the approval of The Council of The College.

3. Supplemental Examinations

Candidates for the High School Assistant's Certificate, Type B, who failed at an examination under former regulations and were exempted from subsequent attendance at The College of Education will take the final examination papers as prescribed herein, but their standing will be determined in the subjects as constituted under the regulations when they first wrote.

A candidate granted permission to write a supplemental examination may do so in one of the following ways:

Type B

1 by writing an examination in August at the conclusion of a summer session. Application must be made by June 24;

2 by attending the Completing Summer Session or the Six-Weeks' Summer Program for Teachers with Professional Education, taking only the subject(s) failed and writing the examination at the conclusion of the course. Application must be made by June 24.

NOTE: A candidate failing in one or more subjects of the Elementary School Program may write the supplemental examination(s) in August. Application must be made by June 24.

Type A

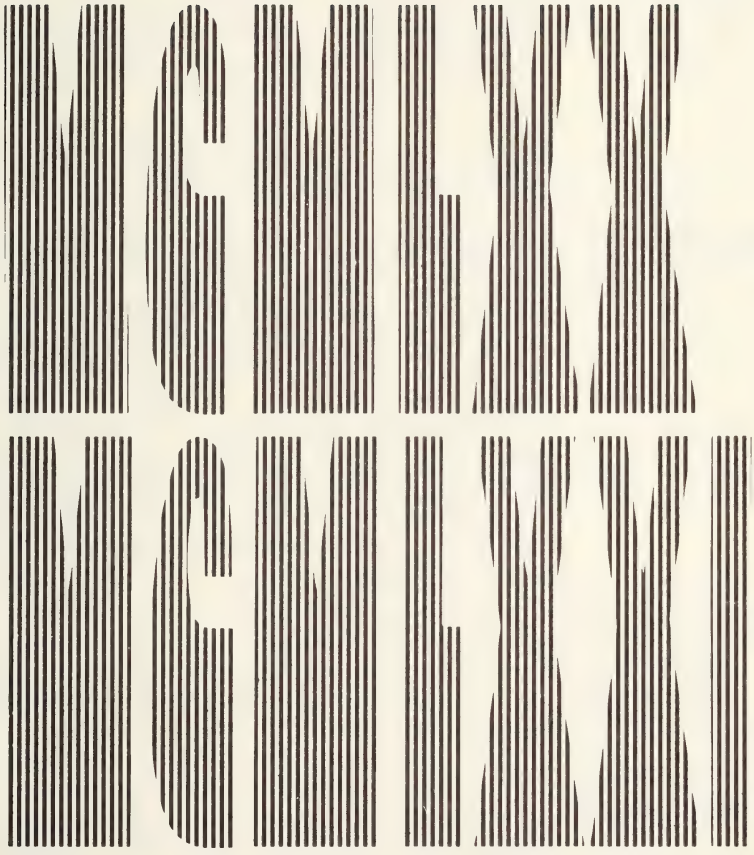
1 by writing examination(s) in August at The College of Education, University of Toronto, or, if sufficient candidates apply, at approved local centres. Application must be made by June 24;
2 by attending the Type A Summer Seminar. Application must be made by April 1.

Type A Practical Tests

Type A candidates exempted from attendance will take their supplemental practical tests at The College of Education, or in special cases at approved local centres. Application for practical tests must be made by December 31.

Second Failures

Should a student fail a second time in either or both of his supplemental examinations, he may be admitted to the Summer Session for Teachers with Professional Education in a subsequent year choosing different optional courses if he so wishes, or he may be refused admission to further courses at the direction of The Council of The College.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One-Year Program for the High School Assistant's Certificate, Type A, and Specialist Certificate in Business and Commerce

In general, candidates entering this program must hold an approved degree after a four-year university course following Ontario Grade 13 or equivalent and graduation with at least second class standing. At least 60 university credits are required.

31. The Type A Certificate

The Interim High School Assistant's Certificate, Type A, qualifies the holder for five years as an assistant teacher of academic and general subjects in the secondary schools of Ontario.

The Interim Type A Certificate may become a Permanent High School Specialist's Certificate upon the completion of two years successful teaching experience in Ontario on which the applicant has been graded as above average on subjects covered by the certificate.

The Permanent High School Specialist's Certificate qualifies the holder to become Head of a Department in a secondary school.

32. Conditions of Admission

1 A candidate for a High School Assistant's Certificate, Type A shall comply with the conditions of admission prescribed in the Department of Education Circular 649, which is periodically revised. Advice about these requirements as they apply to an individual candidate may be had upon enquiry to the Committee on Advanced Standing.

2 Applicants for admission to the Program for the High School Assistant's Certificate, Type A, shall be applicants for admission to the Program for the High School Assistant's Certificate, Type B.

3 No candidate will be awarded a High School Assistant's Certificate, Type A, *before* he has been awarded a High School Assistant's Certificate, Type B.

33. The Specialist Certificate in Business and Commerce

Business and Commerce

There is no Type A program in Business and Commerce subjects but a program leading to the Specialist Certificate in Business and Commerce is provided.

Academic Requirements

1 *Accountancy Specialist Cerificate*

Admission to the program leading to the Accountancy Specialist Certificate will be granted to students who hold the degree of

Bachelor of Commerce from an Ontario university, or an equivalent degree from another province or country, with a standing of at least 60% or III Class Standing, whichever is higher, and who are otherwise qualified to enter the High School Assistants' course, Type B. The student will later be required to try a supplemental examination in any of the required subjects in which he has obtained less than 66%. The required subjects are the university equivalents of: Bookkeeping, Accounting I, Accounting II, Business Law (or Business Finance), Business Machines, Economic Principles and one of Business Arithmetic, Office Practice, Business Organization and Management, and Business Finance (or Business Law).

2 *Data Processing Specialist Certificate*

Admission to the program leading to the Data Processing Specialist Certificate in Commercial subjects will be granted to students who hold a Bachelor of Arts or equivalent degree with a standing of 60% or III Class Standing, whichever is higher, and who have taken university courses in the required subjects or who can qualify by tests on these subjects. The required subjects are: Bookkeeping, Principles of Punched Card Data Processing, Principles of Electronic Data Processing, Advanced Computer Programming and Business Data Processing Systems.

3 *Marketing Specialist Certificate*

Admission to the program leading to the Marketing Specialist Certificate in Commercial subjects will be granted to students who hold the degree of Bachelor of Business Administration from an Ontario university or an equivalent degree with a standing of at least 60% or III Class Standing, whichever is higher, and who are otherwise qualified to enter the High School Assistants' Program, Type B. The candidate will be required to try a supplemental in any of the required subjects in which he has obtained less than 66%. The required subjects are: Bookkeeping, Retail Merchandising, Business Organization and Management, Economics, Marketing Principles and one additional Marketing course, and one of Business Machines, Business Arithmetic, Business Finance and Business Law.

4 *Secretarial Specialist Certificate*

Admission to the program leading to the Secretarial Specialist Certificate will be granted to students who hold the degree of Bachelor of Arts in Secretarial Science from an Ontario university or an equivalent degree with a standing of at least 60% or III Class Standing, whichever is higher, and who are otherwise qualified to enter the High School Assistants' course, Type B. The student will later be required to try a supplemental in any of the required subjects in which he has obtained less than 66%. The required subjects are the university equivalents of Typewriting, Shorthand Theory, Shorthand Practice, Office Practice, Secretarial I and II and

one of Business Correspondence, Business Machines, Business Arithmetic and Business Organization and Management.

34. Recommendation of Type A and Specialist Certificates

Subject to the condition that no student may be awarded a High School Assistant's Certificate, Type A, who does not already hold or is not also awarded a High School Assistant's Certificate, Type B, the final standing of candidates in attendance in the High School Assistants' Program, Type A, will be determined by the records of the practice teaching in the department or subject concerned, and by the combined results of the term work and the final examinations in the same department or subject. The pass mark is second class honours in the final examinations (including sessional records) and a rating of Good or Better on the marks assigned to the practice teaching in the Type A field.

35. Supplemental Examinations

Information regarding supplemental examinations is found in Section 30.

Additional Certificates for Students in the High School Assistants' Program, Type B

A candidate in the High School Assistants' Program, Type B, may elect as an option one of a number of courses leading to additional teaching certificates.

36. Programs

1 Art (leading to Part I of the Intermediate Certificate in Art)
2 Business and Commerce (leading to Parts I and II of the Intermediate Certificate in Accountancy, Data Processing, Marketing, or Secretarial)
3 Elementary School (leading to the Elementary School Teacher's Certificate)
4 Guidance (Part I of the program leading to the Specialist Certificate in Guidance)
5 Home Economics (leading to the Intermediate Certificate in Home Economics)
6 Industrial Arts (admits to a program leading to the Intermediate Certificate in Industrial Arts)
7 Music (leading to Part I of the Intermediate Certificate in Vocal Music)
8 Music (leading to Part I of the Intermediate Certificate in Vocal and in Instrumental Music)
9 Physical and Health Education (leading to Part I of the Intermediate Certificate in Physical and Health Education)
10 Physical and Health Education (leading to Part II of the Intermediate Certificate in Physical and Health Education)
11 Physical and Health Education (leading to the Specialist Certificate in Physical and Health Education)
12 School Librarianship (leading to Part I of the Intermediate Certificate in School Librarianship)
13 Theatre Arts (leading to the Theatre Arts Certificate)

37. Notes Regarding Courses for Additional Certificates

a *Business and Commerce*

Previous Business Education or experience is not required of a candidate who selects one or two options in Business and Commerce. A candidate may be required to attend an evening extension course in the Part I subject content.

A candidate who selects only one option in Business and Com-

merce leading to Part I of the Intermediate Accountancy, Data Processing, Marketing or Secretarial certificate must take one other option. He will be required to attend one additional summer course to qualify for the Intermediate Certificate in the Business and Commerce field concerned. A candidate who selects Parts I and II may qualify for the Intermediate Certificate in the One-Year Program.

b *Home Economics*

Admission to the course for the Intermediate Home Economics Certificate is restricted to candidates who submit evidence of graduation with a standing not lower than 60% in Home Economics of the final year from a university program having at least five approved courses in Home Economics.

c *Music*

A candidate who selects Vocal Music as an optional subject of the High School Assistants' Program, Type B, may, with the approval of the instructor, choose Instrumental Music as a supplementary course.

Admission to the Intermediate Instrumental Music course will be restricted to candidates for Part I of the Intermediate Vocal Music Certificate.

d *Physical and Health Education*

There are no prerequisites for admission to the Intermediate course, Part I.

Students who meet the admission requirements may become candidates for Part II of the Intermediate Certificate in Physical and Health Education or for the Specialist Certificate in Physical and Health Education.

The admission requirement for the Intermediate course, Part II, is a minimum of two university courses in Physical and Health Education.

The admission requirement for the Specialist course is a minimum of 24 university credits in Physical and Health Education and related subjects (exclusive of methods courses).

Courses leading to Part II of the Intermediate Certificate and to the Specialist Certificate will be taken as a third option *in addition* to the course leading to the Interim High School Assistant's Certificate, Type B, if a sufficient number of applications are received to warrant inclusion of these courses in the program. To be eligible, a candidate must also select the Physical and Health Education option leading to Part I of the Intermediate Certificate as one of the methods options.

After successful completion of Part II of the Intermediate Certificate, a candidate may proceed to the Specialist qualification in summer sessions but not until the candidate has completed one year of successful teaching.

e *School Librarianship*

The course leading to Part II of the Intermediate School Librarianship Certificate may not be taken in the summer immediately following completion of the One-Year Program.

38. Recommendation of Additional Certificates

1 *Art, Business and Commerce, Guidance, Home Economics, Industrial Arts, Music, Physical and Health Education, School Librarianship, Theatre Arts.*

On the recommendation of The Council of The College, the following additional certificates may be granted to a candidate in the Program for a High School Assistant's Certificate, Type B, provided that the student is awarded the High School Assistant's Certificate, Type B: Part I of an Intermediate Certificate in Art, Business and Commerce Subjects, Physical and Health Education, Vocal Music, Instrumental Music, School Librarianship; the Certificate in Theatre Arts; the Intermediate Certificate in Home Economics; credit for Part I of the program leading to the Specialist Certificate in Guidance; admission to a program leading to the Intermediate Certificate in Industrial Arts.

2 *Physical and Health Education*

On recommendation of The Council of The College, Part II of the Intermediate Certificate in Physical and Health Education may be granted to a candidate who achieves the above stated standard for Part I of the Intermediate Certificate and who obtains 50% of the marks assigned to the written examinations and practical tests of the course leading to Part II of the Intermediate Certificate. The Specialist Certificate may be granted to a candidate who achieves the above stated standard for Part I of the Intermediate Certificate and who obtains 66% of the marks assigned to Observation and Practice Teaching in the course and 66% of the marks assigned to written examinations and practical tests of the course leading to a Specialist Certificate.

Ontario Teachers' Aquatic Standard – A candidate who is exempted by a medical certificate from a course in aquatics or a candidate who has failed to meet the aquatic standard may be awarded a certificate in Physical and Health Education endorsed 'without aquatics'. A candidate who meets the aquatic standard may be awarded a certificate endorsed 'Credit O.T.A.S.'.

3. Programs for Candidates not recommended for Department of Education Certificate

A candidate for one of the following additional certificates who has met the other requirements of the Type B certificate but has failed to obtain pass standing in the remainder of the course may earn pass standing and be recommended for standing by following the conditions listed below:

1 In *Art, Vocal Music, Instrumental Music, School Librarianship or Theatre Arts*, a candidate who fails in not more than two subjects of the written and practical tests may complete his standing

by passing in the subjects concerned at a subsequent examination without further attendance, but in the subjects of the practical tests such a candidate must try tests conducted at the Summer Session or by arrangement approved by The Council of The College. Any other candidate who fails shall repeat the course for standing.

2 In *Business and Commerce*, a candidate who fails in the written or practical tests in not more than two subjects may complete his standing at a subsequent examination or by attendance at a subsequent Summer Session.

A candidate who takes only one option in Business and Commerce must qualify for Part I of the Intermediate Certificate in order to qualify for an Interim High School Assistant's Certificate, Type B. A candidate who takes two options in Business and Commerce must qualify for Parts I and II of the Intermediate Certificate in Business and Commerce in order to qualify for an Interim High School Assistant's Certificate, Type B.

3 In *Guidance*, a candidate who fails to obtain standing may complete his standing, without further attendance, by meeting certain conditions which will be determined in each case by the Professor of Guidance and The Council of The College.

4 In *Home Economics*, a candidate who fails in the written examinations but passes in all the subjects of the term work may complete her standing by passing in the written examination at a subsequent date without further attendance. A candidate who passes in the written examinations but fails in one or more of the subjects of the term work may obtain her standing by completing successfully a subsequent Summer Session under conditions to be determined by The Council of The College. Any other candidate who fails shall repeat the course for standing.

5 In *Industrial Arts*, a candidate who fails in the written examinations but passes in all the subjects of the practical tests may complete his standing by passing in the written examination at a subsequent date without further attendance. A candidate who passes in the written examinations but fails in one or more of the subjects of the practical tests may obtain his standing by completing successfully a subsequent summer course under conditions to be determined by The Council of The College. Any other candidate who fails shall repeat the course for standing.

6 In *Physical and Health Education*, if a candidate fails to achieve the passing standard, the course must be repeated either in a subsequent Summer Session or in the regular One-Year Program.

Program for the Elementary School Teacher's Certificate (Standard 4)

40 The Elementary School Teacher's Certificate

In order to qualify as a teacher in both elementary and secondary schools in Ontario, a candidate may elect as one option a program leading to the Interim Elementary School Teacher's Certificate.

. Conditions of Admission

1 Candidates shall comply with the conditions of admission and attendance prescribed for candidates of the High School Assistant's Program, Type B,

2 Applicants should note that no candidate will be awarded an Interim Elementary School Teacher's Certificate before he is awarded an Interim High School Assistant's Certificate, Type B.

3 Candidates should have a university background with breadth in the arts, science or languages together with courses in psychology, sociology or child study.

42. Program of Studies

Because the Program for the Elementary School Teacher's Certificate offers instruction in a group of courses, the total lecture time is *ten hours per week*. This fact should be considered carefully when the candidate is selecting options in the High School Assistant's Program, Type B.

The Elementary School Program consists of the following courses and activities:

PART I

Compulsory Courses:
416.1 English for Elementary Schools (2 hours)
416.2 Foundations for Elementary Education (Special Lectures)
416.3 Mathematics for Elementary Schools (2 hours)
416.4 Science for Elementary Schools (2 hours)
416.5 Social Studies for Elementary Schools (2 hours)
and at least one of the following Additional Related Courses:

455.30 *Art and Crafts for Elementary Schools** (2 hours). An introduction to the creative use of media in two and three dimensions; basic design, point, line and shape; print-making; teaching methods; subject integration.

455.21 *French at the Elementary School Level** (2 hours). French as a second language from the earliest grades of the elementary

school; programs; procedures specific to the age level; audio-visual aids.

455.31 *Music for Elementary Schools** (2 hours). A study of contemporary approaches to music learning in elementary schools. Student teachers in this course will be required to participate in a variety of activities.

455.32 *Physical and Health Education for Elementary Schools** (2 hours). A critical examination of teaching procedures which relate specifically to the aims of Physical and Health Education; an activity course based on participation in and examination of games, gymnastics and dance appropriate for the healthy development of children ages 6 to 14.

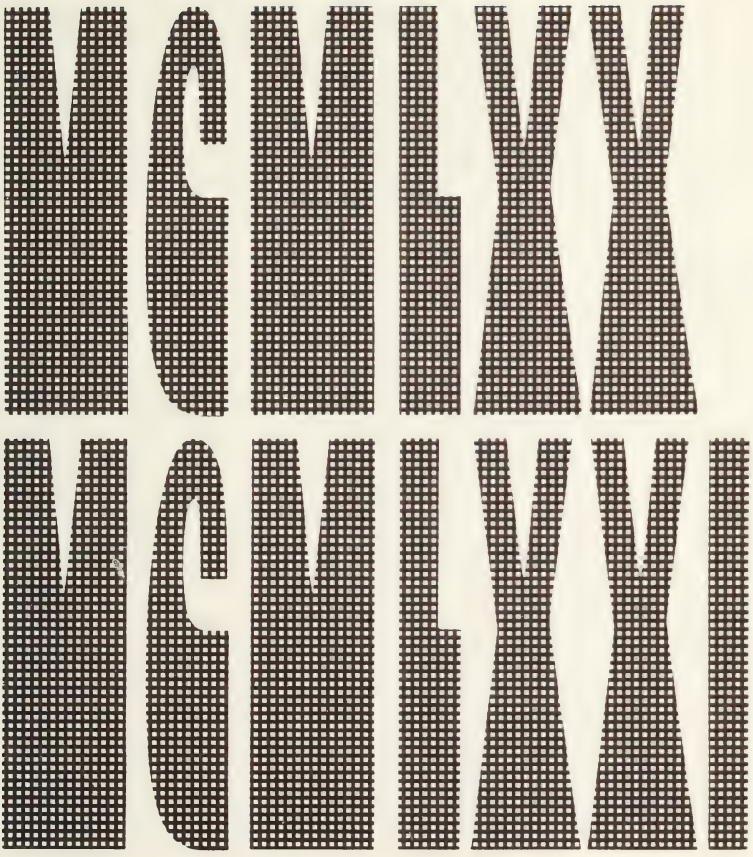
*Enrolment preferences will be given to candidates registered in the Elementary School Program.

PART II

Observation and Practice Teaching (five or six weeks) in selected elementary school classrooms of Metropolitan Toronto. Such weeks are included within the ten weeks of Observation and Practice Teaching required of all students in the Program for the High School Assistant's Certificate, Type B.

43. Supplemental Examinations

A candidate failing in one of more subjects of the Elementary School Program may write the supplemental examination(s) in August. (See Section 30.)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Details of Courses in Programs leading to the Bachelor of Education Degree and to the Interim High School Assistant's Certificate and Additional Certificates

In each case, the numeral in brackets indicates the number of lecture hours per week.

44. Required Course

All students proceeding to the Bachelor of Education Degree and to the High School Assistant's Certificate, Type B, will be required to take:

400.1 *The Structural and Legal Bases of the Ontario School System* (1 hour). The organization of provincial and local systems of education; powers and duties of the various educational authorities; the Education Acts and Regulations of the Province of Ontario. Course content will be covered primarily through directed readings. Lectures will be given on related topics of current educational interest. The course is conducted by the staff of the *Department of Administration and Program Development.*

45. Administration and Program Development

400 *Administration and Program Development*
Courses offered in Part II Educational Theory

400.2 *Program Development.* An examination of the rôle of the teacher as a designer of educational experiences within the school program. Emphasis will be given to the application of current theory and practice of curriculum design to the development of specific school programs which attempt to meet a variety of individual and societal needs. Participants will undertake individual projects as well as participate as a member of a curriculum team in the production of group materials. (4 hours)

400.3 *The Individual Student and the School Program* (2 hours). School programs and practices which meet individual differences among students. A general study will be made of innovative teaching and organizational patterns, including particularly the non-graded school, credit organization, house plans, team teaching, independent study, and other related topics.

400.4 *Administration in the Modern School* (2 hours). A practical study of the use and organization of school resources and services in providing an effective educational program. Emphasis will be

placed on the rôle of the teacher in phases of school operation such as discipline, staff relationships, organization of classes, individualizing instruction, evaluation procedures, and the design and implementation of overall school programs.

400.5 *Administration within the School System* (2 hours). A review of planning and administrative procedures in large systems of education. Particular emphasis will be given to the organization of learning resources, student services, and parent-teacher-student relationships. The interaction of trustees, senior officials, resource personnel, and school administrators will be considered. The effectiveness of large systems in formulating and in achieving desirable educational programs for the individual student and for society as a whole will provide a constant focus for study.

400.6 *Individual Research Project.* Students who wish to engage in an individual research topic must consult a member of the Department at the time of College registration.

Courses offered in Part IV, Additional Related Courses

455.19 *Teaching as a Profession* (2 hours). A study of the development of teaching as a profession; the current status of the profession, and new orientations within the North American context; interprofessional relationships.

455.20 *The School's Institutional Setting* (2 hours). An analysis of the school as a social institution, emphasizing its relationship to other social structures and the impact of these on the teacher and teaching.

455.25 *Evaluation: Measuring Student Performance* (2 hours). A study of current evaluation practices in the schools. The course will develop some of the theoretical issues underlying evaluation methods, the design and marking of a wide variety of testing instruments, including essay, objective, oral, project, and self-assessment. The fair assessment of individuals, comprehensive systems for schools, distinctions between subjects, home reporting, concepts of promotion and failure, and grading systems will also be considered.

455.26 *Research Methods in Education* (2 hours). This course will introduce students to methods of research used in Education. Emphasis will be directed to research in Educational Administration and Program Development. During the course students will develop a research project of their own.

46. Art

402 *Art* (6 hours)
Creative pictorial expression; drawing and sketching from objects; plastic design; model-making; design and lettering; theory and history of Art; methods of teaching.

502 *Seminar in Art* (4 hours)
For Type A candidates in Art.
Classroom methods and problems relating to advanced grades; use of illustrative source materials such as slides, prints and exhibitions in the interpretation and study of Art history and criticism; advanced study of the theory, history and practice of Art; painting, mosaics, stage design, silk screen, batik, lino block printing.

47. Business and Commerce Courses for the Intermediate Certificate

1 Accountancy Program

a *one option*
Intermediate Part I

Typewriting	410.101
Bookkeeping	410.111
Principles and Practices of Teaching Typewriting	410.103
Principles and Practices of Teaching Bookkeeping	410.113

b *two options*
Intermediate Part I
plus
Intermediate Part II

Principles and Practices of Teaching Business	410.153
Business Machines	410.201
Business Law	410.204
or Business Finance	410.205

One of:

Business Organization and Management	410.231
Machine Mathematics	410.202
Office Practice	410.222
Business Finance	410.205
or Business Law	410.204

2 Data Processing Program

a *one option*
Intermediate Part I

Introduction to Data Processing	410.141
Bookkeeping	410.111
Principles and Practices of Teaching Data Processing	410.143

b *two options*
Intermediate Part I
plus
Intermediate Part II

Principles and Practices of Teaching Bookkeeping	410.113
Typewriting	410.102
Principles and Practices of Teaching Business	410.153
Principles of Electronic Data Processing	410.241

One of:

Business Machines	410.201
Business Organization and Management	410.231
Business Finance	410.205
or Business Law	410.204

3 Marketing Program

a *one option*

Intermediate Part I

Typewriting 410.101
Principles and Practices of Teaching Typewriting 410.103
or
Bookkeeping 410.111
and
Principles and Practices of Teaching Bookkeeping 410.113
Retail Merchandising 410.131
Principles and Practices of Teaching Merchandising 410.133

b *two options*

Intermediate Part I

plus

Intermediate Part II

Principles and Practices of Teaching Business 410.153
Economics of Distribution 410.232
Business Organization and Management 410.231
One of:
Business Machines 410.201
Business Law 410.204
Business Finance 410.205
Office Practice 410.222

4 Secretarial Program

a *one option*

Intermediate Part I

Typewriting 410.101
Shorthand 410.121
Principles and Practices of Teaching Typewriting 410.103
Principles and Practices of Teaching Shorthand 410.123

b *two options*

Intermediate Part I

plus

Intermediate Part II

Principles and Practices of Teaching Business 410.153
Shorthand Practice 410.221
Office Practice 410.222
Office Procedures 410.224

ourses for the Specialist Certificate

1 *Accountancy Specialist*

Introduction to Data Processing 410.141
Principles and Techniques of Teaching Accounting 410.413
Organization and Supervision of a Commercial Department 410.453

2 *Data Processing Specialist*

Retail Merchandising 410.131 (regular session only)
Principles and Practices of Teaching Electronic Data Processing (Methods) 410.143
Organization and Supervision of a Commercial Department 410.453

3 *Marketing Specialist*

Consumer Principles and Practices 410.234
Principles and Techniques of Teaching Marketing 410.433
Organization and Supervision of a Commercial Department 410.453

4 *Secretarial Specialist*

Introduction to Data Processing 410.141
Principles and Practices of Teaching Office Practice and Secretarial Subjects 410.423
Organization and Supervision of a Commercial Department 410.453

If an applicant receives credits for courses taken at university or in the four-year Business and Commerce secondary school for

more than half the required Intermediate Parts I and II and Specialist certificate courses, he may select the Specialist program as one option only.

NOTE: All courses cannot be offered every year.

Description of Business and Commerce Courses

NOTE: Courses for which the hours are not shown are normally offered only in the summer sessions.

410.101 *Typewriting Techniques and Practices* (1 hour). Development of a basic facility in typing; application of this skill to letters and business forms.

410.102 *Typewriting Techniques* (1 hour). Introduction to the fundamentals of touch typing; familiarization with keyboard and typing problems. (Less basic skill is required than in 410.101.)

410.103 *Principles and Practices of Teaching Typing* (2 hours). Problems of teaching typewriting in Grades 9 and 10.

410.111 *Bookkeeping* (2 hours). Introduction to accounting; covering journalizing; posting accounts; statements; special journals; closing the books, etc.

410.113 *Principles and Practices of Teaching Bookkeeping* (2 hours). Problems of teaching bookkeeping in Grades 10 and 11.

410.121 *Shorthand Theory* (2 hours). Theory and application of Pitman shorthand.

410.123 *Principles and Practices of Teaching Shorthand* (2 hours). Methods, approaches and practices in the teaching of elementary shorthand.

410.131 *Retail Merchandising* (2 hours). Fundamental principles of selling as it pertains to retail organizations.

410.133 *Principles and Practices of Teaching Merchandising* (2 hours). Principles of the teaching of retail merchandising illustrated by involving the student teacher in the methods of presenting merchandising.

410.141 *Introduction to Data Processing* (2 hours). Survey of the field of data processing and the equipment used.

410.143 *Principles and Practices of Teaching Data Processing* (2 hours). Presentation and discussion of current methods of teaching data processing and computer programming.

410.153 *The Principles and Practices of Teaching Business* (2 hours). Discussion of development, aims, equipment and methods of teaching business subjects.

410.201 *Business Machines* (2 hours). Development of a basic facility in the use of common business machines.

410.202 *Machine Mathematics* (2 hours). Study of the mathematical problems of business and their conversion to such a form that they can be adapted to solution on business machines.

410.204 *Business Law.* Study of the basic law required for the secondary school Law course; contracts; negotiable instruments; employer and employee; principal and agent; bailments, etc.

410.205 *Business Finance.* Study of business and government financing as an introduction to the building of an investment program.

410.221 *Shorthand Practice* (2 hours). Development and application of skill in Pitman shorthand and transcription.

410.222 *Office Practice* (2 hours). Study of practices and procedures followed in the modern office.

410.224 *Office Procedures* (2 hours). The teaching of advanced stenographic techniques and the organization of business.

410.225 *Business Correspondence.* Composition, language and letter writing for Grades 11 and 12 pupils.

410.231 *Business Organization and Management* (1 hour). Survey of the functional areas of business; manufacturing; purchasing; marketing; finance and personnel for various types of organizations and government.

410.232 *Economics of Distribution* (1 hour). Introduction of fundamentals of marketing; production for distribution; gross national product and distribution in a socialist or communist state.

410.234 *Consumer Principles and Practices.* Study of money and consumer prices; consumer credit; family budget.

410.241 *Principles of Electronic Data Processing* (2 hours). Introduction to computer concepts and the stored program.

410.311 *Accounting I* (1 hour). Accounting theory for department, vouchers, manufacturing and costing.

410.341 *Electronic Data Processing I.* The computer as a business tool; flow charting procedures; computer concepts; data flow; solution of business problems.

410.331 *Marketing I.* Process of marketing, merchandise knowledge, salesmanship, etc., as outlined for the Grade 11 secondary school course.

410.321 *Secretarial I.* Theory and application of Pitman shorthand. Dictation to a speed of 70 words per minute and transcription of 35 words per minute is required.

410.411 *Accounting II.* Continuation of Accounting I including work on partnerships, corporations, bonds, reserves, and interpretation of financial statements.

410.421 *Secretarial II.* Advanced Pitman shorthand and secretarial techniques. Dictation at 80 words per minute and transcription at 40 words per minute is required.

410.431 *Marketing II.* Continuation of Marketing I, as outlined for the Grade 12 course, secondary schools.

410.441 *Electronic Data Processing II.* The need for 'Man-machine-communications'; understanding of computer systems as a file processor.

410.413 *Principles and Practices of Teaching Accounting* (1 hour). Discussion of the methods of teaching accounting.

410.423 *Principles and Practices of Teaching Office Practice and Secretarial Subjects* (1 hour). Advanced stenographic and secretarial techniques and practices including the organization and operation of modern office practices and procedures.

410.433 *Principles and Practices of Teaching Marketing* (1 hour). Advanced principles of teaching marketing. The course is practice oriented with the emphasis placed on the individual.

410.443 *Principles and Practices of Teaching Electronic Data Processing* (1 hour). Presentation and discussion of teaching computer concepts and programming for total information processing.

410.453 *Organization and Supervision of a Business and Commerce Department* (1 hour). Study of the problems that confront the Director of a Business and Commerce Department and the beginning teacher.

NOTE: For information regarding Business and Commerce courses write to the Director, Business and Commerce Department, The College of Education.

48. Computer Studies

Courses offered in Part IV, Additional Related Courses

455.05 *Computers in Education* (2 hours). This course is designed to study the use of the computer as an instructional and as an administrative tool. Areas to be discussed include: Computer-Assisted Instruction, Test Scoring, Item Analysis, Curriculum, Educational Research, Student Accounting and other student-oriented areas. Emphasis is on the computer as a problem-solving tool. Prior computer courses or knowledge is not required. Access to the computer centre will be available to students for class-assigned and other approved projects.

455.24 *Educational Tests and Measurements* (2 hours). This course emphasizes the practical approach to tests and measurements. Students will be required to construct tests and use the computer to evaluate their results. Other areas of study include: techniques of measurement; test construction; application of testing; and concepts of educational measurement. Computer training or experience not essential.

49. Economics

412 *Economics* (4 hours). Purpose of teaching Economics and its position in secondary school programs; organization of courses; teaching methods and special devices; examinations and testing.

512 *Seminar in Economics* (1 hour). For Type A candidates in

Economics. Place of Economics in the secondary school curriculum; value of the subject; goals of the teacher; suitable teaching methods; use of graphs, charts and individual reports; analysis and planning of the Grade 13 course; resource materials in books, newspapers, business and government reports, etc.; audio-visual aids; history of Economics; schools of economics thought; examinations.

0. Educational Media

Course offered in Part IV, Additional Related Courses

455.06 *Educational Media* (2 hours). The course will include a study of the basic principles of communication; the use of the various media such as film projectors, tape recorders and television will be a major part of the course.

1. Educational Psychology

414 *Educational Psychology*

Courses offered in Part II, Educational Theory

414.1 *Psychology Applied to Education* (2 hours). Open to all students. Designed to show relevance of general Psychology to teaching. Provides an overview of the areas of Psychology related to education and teaching; problems in human communication, rôle of feedback, non-verbal communication, mass media, T.V., radio. Modern theories of learning will be examined and compared; the relevance of learning theory to motivation, aptitudes and attitudes, learning discrimination and skills, the slow learner, development, maturation and special education, research in education, programmed learning and computer-assisted instruction.

414.2 *The Adolescent – At Home, in School and in the Community* (2 hours). The adolescent period; adolescent needs and processes of adjustment; the adolescent and social class; adolescent-adult relationships; the adolescent and his peer group; physical development; intellectual development; development of interests, attitudes and values; heterosexual development of adolescents; adolescent disciplinary problems; adolescent delinquency.

414.3 *Teaching – An Interpersonal Process I* (2 hours). The teacher as partner in an interpersonal learning process; increased awareness and insight about forces operating in groups; how one's own behaviour affects group productivity; application of theory to development of innovative plans for better classroom teaching using large and small groups.

414.4 *Teaching – An Interpersonal Process II* (4 hours). This course is planned for students who wish to pursue in greater depth the areas of study included in Course 414.3. In addition, it will include enquiry into the principles of sensitivity training and the various types of encounter groups, and the way in which experience in small group living will increase the awareness of the forces affecting the teacher and the student in the school situation. Increased self-understanding and the ability to structure the social environment

for the improvement of learning are among the goals of this course

414.5 *Individual Research Project.* Students with good academic background in Psychology and some previous research experience may be permitted to do an individual research project on some topic related to Psychology and its application to education. Students seeking such permission must have the approval of a departmental committee which may recommend to The College Council that permission be granted to pursue this research project in lieu of one and in exceptional cases two courses in Educational Psychology.

Courses offered in Part IV, Additional Related Courses

455.12 *Introduction to Child Psychology* (2 hours). Motivation; why children learn; physical characteristics and school behaviour; children's abilities; children as social creatures; personality adjustment.

455.16 *Principles of Programmed Learning* (2 hours). Preparing and structuring objectives; programming styles; linear and branching; principles of writing and revising programs; feedback; computer-assisted instruction; program evaluation.

52. English

417 *English* (4 hours)

LITERATURE:

Values inherent in the study of good literature; basic approaches; various methods of presenting such literary forms as the poem, the drama, the essay, the short story, and the novel; the choosing of suitable text-books for pupils of different abilities and grades; planning courses of study; setting and marking examination papers; oral and supplementary reading; problems related to the teaching of English literature.

COMPOSITION:

The basic aim in teaching composition; place and treatment of grammar, rhetoric, logic and word study in the teaching of composition; principles to be followed in arranging courses; studying models; assigning, planning, evaluating and correcting compositions; improving the pupil's oral English; conducting class discussions; problems related to the teaching of English composition.

MEDIA:

The basic aim in treating mass media; objectives; categories; procedures.

ELECTIVES:

Creative thinking; developmental reading; creative drama; screen education; group dynamics; creative writing; mass media; psycholinguistics.

517 *Seminar in English* (4 hours). For Type A candidates in English and, in part, English and Drama, English and French, English and German, English and History, English and Latin, English and Russian, English and Spanish.

Teaching and discussion of selected topics; the English specialist; the Head of the Department; new methods; sequential programming; thematic study; comparative techniques; enrichment; acceleration; the slow learner; educational television; the new grammar; works in translation; remedial and developmental reading; advanced and general courses; mass media; creative thought; creative writing; professional development; the ungraded school; the future of English studies.

Courses offered in Part IV, Additional Related Courses

455.22 *The Language Arts of the Cinema* (2 hours). The course is designed to study trends in contemporary cinema. Although the course concentrates mainly on feature films of such directors as Hitchcock, Bergman, Varda, Antonioni, Fellini, Godard, Truffaut, Resnais, Losey and Lester, it does not neglect the popular cinema nor does it omit experimental short films. The several arts of the director, script writer, actor, editor, lighting-cameraman, composer, and sound man are studied so that the students may have a full appreciation of the language arts amalgam that we experience in the cinema. Enrolment is limited.

455.27 *Developmental Reading* (2 hours). This course is designed to introduce students to the possibilities of developmental reading at the secondary school level. Basic principles underlying an instructional program will be discussed. Specific methods of determining reading achievement, selecting patterns of organization, and planning the instructional program will be introduced. Of major emphasis will be the devising of practical developmental reading programs. Enrolment is limited.

53. Geography

418 *Geography* (5 hours). Listed below are a number of Geography course units designed to give a degree of flexibility in the preparation of Geography teachers. This professional course has been designed to meet the demand for professionally trained people who are either

i graduate Geographers (Type A candidates)

ii other University graduates (Type B candidates)

and who will proceed to a career in education, either as a specialist teacher of Geography, or as one who wishes to teach Geography together with other subjects. Because the department uses a team approach, two or more members of staff may be concerned with each unit.

418.1 *Geography – Orientation.* The scope of the rôle of the Geography teacher.

418.2 *Geography – Curriculum Planning.* Recognition of a curriculum framework as a general context within which the strategy of obtaining educational objectives and classroom practice may be discussed; examination of courses of study in order to identify and

evaluate their components in relation to the principles of curriculu design.

418.3 *Geography – Instructional Techniques and Procedures.* Rec ognition, analysis and construction of learning situations in orde to understand how educational objectives in Geography ar achieved; study of various resource materials, teaching procedure and techniques which facilitate the achievement of such objectives investigation and construction of objectives and the developmen of units of study as an organizing structure within which effectiv instruction and learning take place.

418.4 *Geography – Educational Measurement and Evaluation. A* study of ways to evaluate the effectiveness of learning experience

418.5 *Geography – Field Studies.* Integration of the objectives and techniques of 'landscape' study.

Geography – Practice Teaching. A clinical observation of the teaching-learning process; an expression of philosophy, techniques and procedures in the classroom and in the field.

416.5 *Geography – Elementary School.* A program based on the second, third and fifth Geography courses outlined above.

518 *Seminar in Geography* (3 to 4 hours). For Type A candidates in Geography. Candidates will meet as a special class in a program concerned with the study of Principles of Curriculum Design as models for the development of geography curricula which meet the various future conditions and variables in education.

Courses offered in Part IV, Additional Related Courses

455.03 *Curriculum Theory and Design: A Research Seminar* (2 hours). Enquiry into the theory and design of a curriculum and the examination of curriculum projects in the field of social studies and geography at the elementary and secondary school levels.

455.10 *Game Theory and Simulation in Relation to Learning* (2 hours). An introduction to game theory and simulation as an approach to learning in geography and social science.

455.18 *Special Education for the Disadvantaged Learner* (2 hours). An introduction to the scope and range of this specialized field in education related to the needs of exceptional children. (Students who enrol must be prepared to meet with guest instructors at various times and places.)

54. Geology

420 *Geology* (4 hours). Value and objectives of a Geology course in the Ontario secondary school curriculum: Four-Year Program; investigation and study of appropriate teaching methods; procedures and curriculum organization; use and value of maps, equipment, teaching aids, books and field exercises for secondary school Geology.

520 *Seminar in Geology* (3 hours). For Type A candidates in

Geology. (These candidates are advised to select Geography and Science as options in the High School Assistants' Program, Type B.)
Teaching and discussion of the Geology curriculum; development and analysis of some of the difficult topics by means of original research and subsequent reports; experimental treatment of the work; field exercises; use of texts, manuals, maps and teaching aids; measurement and evaluation; organization and timing of a course of study in Geology and Mineralogy; discussion of appropriate teaching methods and procedures.

518/20 *Seminar in Geography and Geology* (3 hours). For Type A candidates in Geography and Geology.
Contents and methodology of the prescribed courses in Grades 11, 12 and 13. Additional details of the seminar are included in prescriptions for Geography and Geology above.

55. Guidance

422 *Guidance* (6 hours). Foundations of Guidance; counselling theory and practice; assembling educational and occupational information for student use; individual assessment procedures; group techniques in Guidance.

NOTE: For further information regarding the course in Guidance, write to the Guidance Department, The College of Education, University of Toronto.

56. History

424 *History* (3 hours). Position of History in the high school curriculum; the 'uses' of History and the aims of the teacher; principles of selecting content and various methods of organizing; classroom methods, such as question-development, lecture, supervised work, socialized techniques, Fenton's enquiry method, classroom groups, rôle-playing, audio-visual lessons, team-teaching, etc.; prescribed sections of academic work for illustrative use; the teaching of Four-Year classes; Two-Year students; enrichment for gifted students; History in the ungraded school; standards and examinations; the case for social studies; the impact of the Hall-Dennis Report; the other social sciences in relation to History teaching; the planning of curriculum; resources.

524 *Seminars and Lectures in History* (2 hours). For Type A candidates in History and in English and History.
This course includes the essential content of History 424, and the following:
Studies in the philosophy of History and approaches to History teaching; interpretations of history; history as a social science and as a humanistic subject; controversy and bias in history; the contribution of the social scientist to history; the use of documents; an appraisal of enquiry techniques, case-history studies, the Harvard unit series, etc.; the rôle of the History Specialist; the maintenance and improvement of scholarship; problems and current trends in the teaching of History.

426 *History, Philosophy, Sociology of Education*

Courses offered in Part II, Educational Theory

426.1 *Comparative Education* (2 hours). Much of the content of this course can be determined by the interests of students enrolling for it. In general terms it may be concerned with methods in comparative education, with certain distinctive features in the educational systems of Canada and other leading countries in the western world, and with trends towards international cooperation in education.

426.2 **a** *Dilemmas of Contemporary Education I* (2 hours). The course is aimed at introducing the student to the dilemmas of contemporary education. These dilemmas include the contrasting of traditional approaches to education and contemporary theories; the problem of learning in the era of the 'knowledge explosion'; the place of the specialist in the schools; the interrelationships of the disciplines; the rôle and function of the teacher in the changing social structure; and so on. Various theories proposed as means of overcoming these problems will be considered, and it is hoped to obtain practical experience in dealing with them in Course II described below.

426.2 **b** *Dilemmas of Contemporary Education II* (2 hours). This course is specifically designed to complement Course 2(a) described immediately above. The emphasis will be on putting theories into operation. Problems involving various disciplines will be studied and interdisciplinary approaches to clarifying issues will be attempted. An effort will be made to establish bonds with other departments of The College so that the student can learn by experience of the impact of one discipline on another. The course is experimental. No prerequisites are imposed, but the number of students taking Courses I and II will of necessity be limited.

NOTE: Dilemmas of Contemporary Education I and II are concurrent courses; that is, a student who registers in one must register in the other (2 hours for each course, a total of 4 hours).

426.3 *Modern Philosophy and Education* (2 hours). Through the examination of selected modern philosophical works, this course will deal with such key problems (among others) as human freedom, coercion in the classroom, the problem of absurdity, social philosophy and educational theory, approaches to student-centred education, the influence of modern philosophy on methodology in education. Conflicting viewpoints in recent philosophy will also be introduced and examined speculatively in an educational context.

426.4 *Progressive Education in Theory and Practice* (2 hours). An analysis and discussion of progressive theories and practices over the past two hundred years, with special reference to the ideas of Rousseau, Dewey, and Ontario's Hall-Dennis Report, for the purpose, in the main, of inducing beginning teachers to search con-

stantly for meaning in such familiar learning concepts as interest, activity, discovery, assimilation, freedom, authority, natural growth, creativity, continuous progress.

426.5 *School and Society* (2 hours). This course will involve a consideration of such problems as socio-cultural influences on educational achievement, value conflicts (between generations and among socio-economic classes), and the conflicting functions of the school as an institution for transmitting the cultural heritage as well as criticizing it. An analysis of these problems will uncover such issues of current concern to schools and teachers as 'the generation gap', 'educational control', 'student power'.

426.6 *Sociology of Education* (2 hours). An examination of the school as an institution in the society which it serves. Topics will include the structure of society and education, education and social change, education and social mobility, the socialization of the child, the social rôle of the teacher, the influence of economic and political forces on education, education and the values of the community and the nation, education and international relations. Students will be expected to relate the principles discussed to their own communities. Previous university work in sociology is desirable but not mandatory.

426.7 *Values in Education* (2 hours). An examination of selected topics in value theory seen within the educational context. Examples of possible topics: authority and freedom; perception and judgment in education and the arts; the aims of education; valuational impact of the mass media; the teacher and the new morality; expression, representation, and value formation; conceptual analysis of the educational environment. No formal background in philosophy is required.

426.8 *Individual Research Project.* Qualified students who wish to substitute an independent study project for one or two (not more) courses in this Department, must first obtain the approval of a member of the Department and subsequently of The Council of The College.

Courses offered in Part IV, Additional Related Studies

455.28 *Educational Issues in Perspective* (2 hours). The intention is to seek an understanding of basic – *ipso facto* contemporary – issues in education through examining the writings of selected educators of the past and present. Students will have a voice in selecting themes and authors, and will be expected to share in the reading, the presentation of papers, and the exchange of views through class discussion upon which the success of this course will largely depend.

455.11 *History of Education: A Reading-Discussion Course* (2 hours). For a course of this kind enrolment is limited to seminar proportions. Students are invited to share the reading and subse-

quent discussion of selected influential educational writings b famous or well-known writers, past and contemporary. The inter tion is to learn from direct sources and to see current developmen in this perspective.

455.33 *Marxist Educational Theory* (2 hours). This course will b given in the form of a one-hour lecture and a one-hour questio and discussion period each week. The first half will concentrate o basic writings of Marx, Engels, and Lenin. The second half wi deal with Makarenko, Krupskaya, Lunacharsky, and Kalinin. Ther will be no formal examination in this course, but students will b required to submit a major paper on some aspect of Marxist educa tional theory in discharge of their obligation to show competence

58. Home Economics Program for the Intermediate Certificate

428 *Home Economics* (8 hours). The development of Home Eco nomics in Ontario schools; present trends, values, aims; responsi bilities of the Home Economics teacher for curricular and extra curricular programs.
Curricula: materials, procedures, content.
Teaching methods and techniques currently applied in this field
Evaluation: objectives and materials.
The Home Economics classroom; selection, arrangement and car of furnishings and equipment.
Records, budgets, regulations.
Each student will participate in a program of individual and grou studies of problems of families and communities, and problems o pupils and teachers, involving professional reading and field ex periences.

528 *Seminars in Home Economics* (2 hours). For Type A candi dates in Home Economics.
A study of Home Economics education as it relates to the Canadian family, with emphasis on readings in current literature and dis cussions on basic problems of Home Economics teaching. Student will become familiar with resource materials, with ideas expressed by outstanding workers in the field, and will develop a strong philosophy needed for potential leadership.

59. Industrial Arts

430 *Industrial Arts* (8 hours). A program which admits to the sequence leading to the Intermediate Certificate in Industrial Arts. Problems presented to develop creative abilities, experimentation, hand and machine skills needed in the production of useful and well designed articles. Theory and practice in drafting; woodwork ing; sheet and metal work; machine shop practice; electricity; welding.
Method of instruction; class organization of the general shop; philosophy of teaching. Additional practice teaching in Industrial Arts is provided.

Latin and Greek

432 *Latin and Greek* (5 hours in Latin, 3 hours in Greek). An examination of methods in various aspects of the teaching of Latin and Greek, including: oral reading of prose (Caesar, Livy, Nepos) and poetry (Virgil, Ovid); morphology; grammar and syntax; derivation; audio-visual aids and interest devices; historical background of prescribed authors.

532 *Seminar in Classics* (2 hours). For Type A candidates in Classics, Latin, Latin and Greek and, in part, Latin and French, English and Latin, and Latin and Italian. An examination of methods applicable to the prescribed courses in Grade 13 Latin and Greek authors for the current year involving a study of adequate translation and of literary appreciation of the prescribed passages; the philosophy of Horace; Hexameter, Elegiac, Sapphic and Alcaic metres.

1. Mathematics

434 *Mathematics* (5 hours). A consideration of the place of mathematics in elementary and secondary education; objectives of the mathematics teacher.
Classroom procedures and teaching methods, Grade 1 through Grade 12, of a balanced teaching program including methods designed to obtain maximum student participation in the discovery and development of mathematical concepts; individual, small group and large group participation methods; team teaching; use of multimedia techniques in the mathematics classroom; testing and evaluation; the teaching of Four-year and Two-year classes.
Contemporary trends in mathematics and their implications for the elementary and secondary schools; history and development of mathematics; foundations of algebra and geometry; fundamental concepts of logic; applications of mathematics.

534 *Seminar in Mathematics* (4 hours). For Type A candidates in Mathematics and, in part, Mathematics and Physics.
A consideration of secondary school Mathematics from an advanced point of view; methods of presenting topics of the secondary school Mathematics program with particular emphasis at the Grade 13 level; developments in Mathematics and the implications for senior secondary school Mathematics programs; curriculum development; organization and administration of the secondary school Mathematics department.

Course offered in Part IV, Additional Related Courses

455.23 *Research Project in Mathematics Education* (2 hours). A study in depth of a selected problem in mathematics education involving a combination of seminar, laboratory work and field experience. This study is intended for students who are primarily interested in the teaching of mathematics. Enrolment is limited.

62. University of Toronto Course in Mathematics

303 *Mathematics* (3 hours). An introduction to a higher Mathe matics including a study of some secondary school topics from a advanced point of view. This course is open to students having a least 12 credits in university Mathematics.

NOTE: This course in Mathematics is offered to provide particula background pertinent to the teaching of secondary school Mathe matics. This course carries 3 credits toward qualification fo endorsement of the High School Assistant's, Type B, Certificate an for the Type A Certificate.

63. Modern Languages: French, German, Italian, Russian, Spanish

436 *Modern Languages* (4 hours per language)

NOTE: The student should be fully aware that the major portion o the lecturing is done in the language concerned, and that he i expected to use the language in his teaching practice.

METHODOLOGY:

Current aims; specific objectives at secondary and primary levels curricula; materials.

Procedures; specific techniques in audiolingual presentation; th written language; vocabulary acquisition; inductive approach t language generalizations; teaching literature.

Lesson planning (initial, series, review).

Tests and examinations, both oral and written; administration marking.

APPLIED PHONOLOGY:

Description of the sounds; intonation; accent; discrimination an production on the part of the learner; standards of phonemic an phonetic accuracy (where pertinent); remedial drills; error detec tion by the teacher; counselling techniques and practice.

CONVERSATION:

Free and guided discussions; leadership practice.

LANGUAGE PRACTICE:

Current usage, emphasizing the spoken language; laboratory drill with pedagogical bias; testing program. (Additional laboratory tim may be required of those in need of remedial work.)

536 *Seminars in Modern Languages* (2 hours for each language) For Type A candidates in French, French and German, French an Italian, French and Russian, French and Spanish, and, in part Latin and French, Latin and Italian, English and French, Englis and German, English and Spanish, English and Russian, and Latin and Spanish.

Study in depth at all levels, as outlined in the Courses of Study an Curricula issued by the Department of Education; stress on method of presenting work at the Grade 13 level.

For Type A candidates in French (2 additional hours). Selecte topics, such as linguistics, reference works, learning theory, curri culum, resource materials, course organization, leadership, language laboratory hardware.

Courses offered in Part IV, Additional Related Courses

455.01 *Applied Linguistics* (2 hours). Study of different applications of linguistic theories to the teaching of French; special attention to problems of phonemics, morphology, syntax and semantics in connection with the data of structural linguistics. This course is open to any student of French.

455.29 *Culture and Society as it relates to the teaching of French* (2 hours). Historical, social and regional factors, with emphasis on French Canada.

455.02 *Culture and Society in German Language Teaching* (2 hours). Historical, social and regional factors in the teaching of modern German; a laboratory approach.

455.07 *Electronic Aids to Language Learning* (2 hours). Audio-video equipment, including all laboratory types. (This course, largely televised, includes practice at equipment manipulation. It pre-supposes an interest in, but no knowledge of, electronic aids to learning. It is not to be chosen by Type A French II candidates, whose course already covers much of this work; otherwise, it is open to any foreign modern language student.)

455.21 *French at the Elementary School Level* (2 hours). French as a second language from the earliest grades of the elementary school; programs; procedures specific to the age level; audio-visual aids.

NOTE: This course may be chosen by

i a candidate enrolling in the Elementary School option as well as in French;

ii any candidate proceeding to a Type A certificate in French (alone or in combination with another Type A field).

64. Music, Instrumental Part 1 of the Program for the Intermediate Certificate

438 *Music, Instrumental* (6 hours). This is a practical course emphasizing the individual mastery of instruments and methods of class teaching.

538 *Seminar in Instrumental Music* (3 hours). For Type A candidates in Music. An appraisal of current trends at the junior and senior levels; the materials used; the aims of the teacher.

Advanced ensemble techniques; original works or arrangements for the ensemble.

65 Music, Vocal Part 1 of the Program for the Intermediate Certificate

440 *Music, Vocal* (5 hours). The musical experience; listening materials; sound exploration; manipulation of sound; symbols of music; musical procedures.

Techniques of choral production; conducting; song materials.

540 *Seminar in Vocal Music* (3 hours). For Type A candidates in Music. Comparative studies of current aesthetics and practices; advanced choral techniques; vocal materials; original choral compositions; problems in the developing of aural responsiveness to

varied musical expressions; examination of sound manipulation and formal procedures; multi-media presentations.

66. Physical and Health Education

442.1 *Physical and Health Education* (8 hours). Part I of th Program for the Intermediate Certificate:
An introductory course in principles and practices of Physical ar Health Education. Emphasis is placed on methods of teaching th physical activities and health materials outlined in the Courses c Study, Grades 7 to 10, of the Ontario Department of Education.

442.2 *Physical and Health Education* (4 hours). Part II of th Program for the Intermediate Certificate:
An introduction to the scientific bases of Physical and Healt Education. The course includes methods and materials for Grade 11 and 12; scientific principles; historical developments; introduc tion to statistical methods; program planning.

442.3 *Physical and Health Education* (4 hours). Program for th Specialist Certificate:
Emphasis is placed on advanced methodology; philosophic an scientific principles; organization and administration of all aspec of Physical and Health Education in the school situation.

542 *Seminar in Physical and Health Education* (10 hours). Fc Type A candidates in Physical and Health Education.
The Seminar is concerned with: educational concepts relative t Physical and Health Education; scientific principles relative t human movement; organization and administration of all phase of the secondary school Physical and Health Education program advanced methodology and teaching techniques.

Courses offered in Part IV, Additional Related Courses

455.04 *Current Health Problems in North American Society* (hours). Survey course including lectures and seminars related t such health areas as cardiovascular disease, mental health, air an water pollution, consumer health, drugs, and sex education.

455.15 *Outdoor Education* (2 hours). An introductory cours emphasizing the use of the outdoor environment as an educationa media. An interdisciplinary program which includes lectures an seminars and devotes a considerable amount of time to field work

67. Political Science

444 *Political Science* (4 hours). Aims and values of Politica Science in secondary school; the prescribed course; teaching or ganization and methodology; individual assignments; relationshi to History and to current events; books, periodicals and othe resource materials; examinations and evaluation.

544 *Seminar in Political Science* (1 hour). For Type A candidate in Political Science.
Aims of teaching Political Science at the secondary school leve the scope of the subject; methods of teaching comparative goverr

ment and politics; the choice of materials, their organization and lesson planning for the Grade 12 course in World Politics; the Grade 10 course in Canadian Government; content and method for Four-Year Programs; enrichment techniques for gifted students; source materials in books, paperbacks, periodicals, pamphlets, etc.; techniques of discussion and the conduct of meetings; relationship of Political Science to History and other secondary school subjects; testing and examinations; the qualities of a specialist; the history of Political Science as a study.

8. Psychology and Sociology

446 *Psychology and Sociology* (4 hours). The value and objectives of the secondary school course 'Man in Society'; planning; methods of presenting various areas of the course; demonstrations and discussion of specific techniques; relationship of 'Man in Society' to other secondary school subjects and to Guidance

546 *Seminar in Psychology and Sociology* (2 hours). For Type A candidates in Psychology and Sociology.
The seminar concerns itself with objectives, content and teaching methods for certain areas of the course 'Man in Society'; the rôle of the specialist in the secondary school.

69. School Librarianship

448 *School Librarianship* (12 hours). Basic training for those who may wish to serve as secondary school librarians.
Instruction in the School Media Centre Collection with particular attention to recreational, biographical, scientific and basic reference materials; School Media Centre Program and Administration; Organization of Materials in the School Media Centre, with laboratory periods for practice; Seminars for discussion of materials and student presentations.
As enrolment in this course is limited, candidates will be selected on the basis of a personal interview with a member of the faculty of the School Librarianship Department. Candidates accepted for School Librarianship should consider selecting course 455.06 Educational Media, as their Additional Related Course.
This course in School Librarianship is Part I of a two-part program leading to the Intermediate Certificate in School Librarianship. The course cannot be completed during the One-Year High School Assistant's Program but requires for the Intermediate Certificate a summer session subsequent to one year of successful experience in a school library.

70. Science

450 *Science* (4 hours). The rôle of Science in Elementary and Secondary Education; the aims and objectives of Science; Science curriculum design; unit planning and lesson planning; a study of representative portions of contemporary Science courses; an examination of the various approaches to the teaching of Science; procedure and methods used to obtain maximum student interest

and participation; recognition of individual student differences; th use of audio-visual aids in Science teaching; source materials; th purchase, maintenance and use of equipment; testing and evaluatio

Courses offered in Part IV, Additional Related Courses

455.09 *Environmental Studies in Science* (2 hours). This cours consists chiefly of the development of environmental studies th can be performed by secondary school students of Science. Area of study include ponds, streams, forests, grasslands, wetlands, san dunes, soils, and environmental pollution. Field experience is pr vided. A background in ecology is desirable.

550 *Seminars in Science.* The methodology and content of th Science programs in the Senior Division; the organization of th Science programs; the rôle of the specialist teacher and the Depar ment Head.
550.01 Seminar in Biology (2 hours)
550.02 Seminar in Chemistry (2 hours)
550.03 Seminar in Physics and, in part, Mathematics and Physi (2 hours)

71. Theatre Arts

452 *Theatre Arts* (9 hours in addition to regular evening an weekend workshop sessions). An introductory course dealing wit the philosophy and practice of Drama in Education: The purpos of curricular and extra-curricular drama; creative drama; directio production; study in the imaginative concepts and structures of th aural and visual media; planning developmental programs.
This course consists of group projects frequently culminating i performance.
Because of the nature of Theatre Arts, class size is limited.

552 *Seminar in Drama* (2 hours). For Type A candidates i English and Drama. An individual research project concernin Drama in Education selected by the candidate in consultation wit the Theatre Arts Department.

Bachelor of Education Degree Program for Graduates

2. Bachelor of Education Degree Program for Graduates of the One-Year Course prior to 1970

Bachelor of Education Degree Program for graduates of the one-year course prior to May, 1970, leading to the Interim High School Assistant's Certificate, Type B. Commencing September, 1970, the Division of Extension, University of Toronto, will offer a program in summer and winter sessions which will enable graduates of the one-year College program prior to May, 1970, leading to the Interim High School Assistant's Certificate, Type B, to qualify for the Bachelor of Education Degree.

PROGRAM: A candidate must complete two of the courses in the present one-year program leading to the Bachelor of Education Degree, namely:

a one course selected from a list of offerings in *Part II, Educational Theory,*

b one course selected from a list of offerings in *Part IV, Additional Related Courses.*

NOTE:

i The summer sessions, beginning in 1971, will be of six weeks' duration.

ii The course in each subject will be thirty class hours.

iii A candidate may take one or two courses in winter or summer session.

iv It may be necessary to limit enrolment in certain courses.

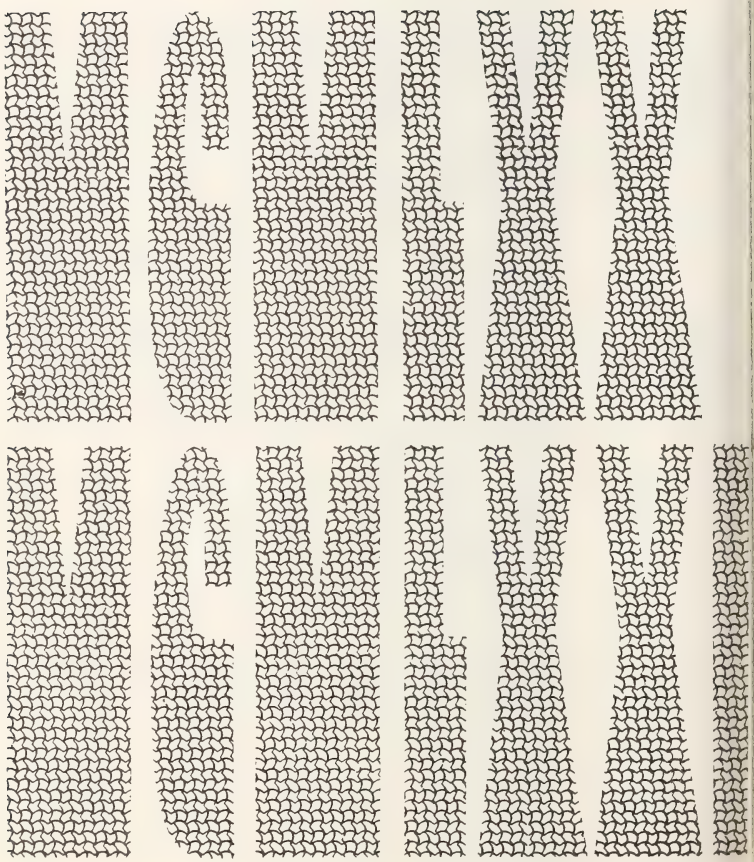
v A course will not be offered unless sufficient candidates apply.

Admission Requirements: A candidate must submit to the Secretary, Division of Extension, proof of:

a graduation from *The College of Education* in a One-Year High School Assistants' program, Type B, prior to May, 1970;

b possession of the Permanent High School Assistant's Certificate.

Enquiry and Application: The Secretary, Division of Extension, University of Toronto, 84 Queen's Park Crescent, Toronto 181.



One-Year Programs for Certificates in Technical Education and Industrial Arts
(A) Vocational or Occupational Certificates

Candidates with suitable academic standing and wage-earning experience may enter a One-Year Program leading to a Vocational Certificate or an Occupational Certificate (Practical Subjects).

73. Vocational Certificates

Interim Vocational Certificate, Type B. The basic certificate is the Interim Vocational Certificate, Type B. It qualifies the holder for five years as a teacher in the Vocational subject designated on his certificate.

A Permanent Ordinary Vocational Certificate may be requested of the Department of Education upon the completion of two years' successful teaching experience in a secondary school in Ontario.

Interim Vocational Certificate, Type A. The higher certificate is the Interim Vocational Certificate, Type A. It qualifies the holder for five years as a teacher in the Vocational subject designated on his certificate.

A Permanent Vocational Specialist's Certificate may be requested of the Department of Education upon completion of two years' successful experience in a secondary school in Ontario in the subject designated on the certificate. The Type A Certificate may qualify the holder to become a Technical Director in a secondary school.

74. Occupational Certificates

Interim Occupational Certificate, Type B (Practical Subjects). The basic certificate is the Interim Occupational Certificate, Type B (Practical Subjects). It qualifies the holder for five years as a teacher in Occupational subjects.

A Permanent Occupational Certificate (Practical Subjects) may be requested of the Department of Education upon completion of two years' successful experience in a secondary school in Ontario.

Interim Occupational Certificate, Type A. The higher certificate is the Interim Occupational Certificate, Type A. It qualifies the holder for five years as a teacher in Occupational subjects.

A Permanent Occupational Specialist's Certificate may be requested of the Department of Education upon the completion of two years' successful experience in Ontario. This Certificate may qualify the holder to become a Director of an Occupational Department.

75. General Conditions of Admission

An applicant for admission to the One-Year Program leading t certificates in Vocational, Occupational, or Industrial Arts mus make application, not later than August 3, to the Director of th Department of Technical and Industrial Arts, 371 Bloor Street West Toronto 181, Ontario, on a form to be obtained from him, and shal submit with the application, on forms also to be supplied by th Director:

A certificate of birth

If not born in Canada, the candidate must submit a certificat from a competent authority that he is a Canadian citizen or ha landed immigrant status or has applied for Canadian citizenship.

Age limits

For the Interim Vocational course, male applicants shall be at leas 23 years of age; female applicants shall be at least 21 years of age This is in accordance with a Department of Education requirement See the Department of Education Act, 1954, Section 11, (1) (c) A candidate for admission to The College of Education is require to produce evidence of a negative tuberculin test reading or ches x-ray taken within the preceding year.

76. Requirements for Admission to Program for the Interim Vocational Certificate, Type B

To this program may be admitted Applied Science graduate (engineers), graduates of Polytechnical Institutes or Colleges o Applied Arts and Technology, and skilled tradesmen.

Engineers

An applicant shall be the holder of a degree from the Faculty o Applied Science of an approved university, and shall submit state ments to prove not less than two years' subsequent experience i the field of his major subject.

Technologists and Technicians

An applicant shall hold a three-year diploma from an approve program offered by a Polytechnical Institute or College of Applie Arts and Technology, which requires Ontario Grade 12 standing as one of the conditions for admission. He must also documen three years of acceptable work experience.

Skilled Tradesmen

An applicant is required to give evidence of a minimum academic education of Grade 12, Ontario, and approved Trade Training and Experience, generally seven years.

The training or apprenticeship required shall be that demanded fo journeyman's qualifications in the trade concerned. Special training obtained in an approved day vocational school will be taken into account in considering the period of training. An applicant shall submit statements from the persons or firms under whom they were trained, showing the length of the training period and the nature of the work.

The experience required shall be several years of wage-earning journeyman trade experience with reputable firms, and shall be such as to show that the applicant is a skilled craftsman, competent in the main branches of the trade concerned, and familiar with its recent development. The length of the journeyman experience depends upon the nature of the trade. Documentary evidence of experience in the trade in approved shops shall be furnished by the applicant.

An applicant for the Interim Occupational Certificate, Type B (Practical Subjects), shall furnish proof of wage-earning experience over at least seven years and involving at least three trade areas.

In calculating the total years of wage-earning experience and/or training, only those years subsequent to the date of the highest academic attainment used in the calculation can be credited unless the academic program of the candidate was interrupted for a number of years during which he was engaged in such wage-earning activity.

NOTES:

1 In all cases the name of the degree, diploma, or apprenticeship must correspond with both the nature of the wage-earning experience and the subject to be taught.

2 A minimum of two years of Canadian wage-earning experience is required.

77 Requirements for Admission to the Program for the Interim Vocational Certificate in Home Economics

To this program may be admitted graduates with satisfactory standing in the three-year Secondary School Home Economics teaching option of the Ryerson Polytechnical Institute or equivalent. Wage-earning experience is not a prerequisite for admission to this program.

NOTES:

1 Home Economics is offered in the One-Year Program only.

2 Applicants should pay particular attention to the fact that no Vocational Type A Certificate is offered in Home Economics. All candidates must obtain an acceptable B.A. degree before they are eligible to proceed to higher certification through the High School Assistants' Program.

78 Requirements for Admission to the Program for the Interim Vocational or Occupational Certificate, Type A

This program is offered to graduates of a Faculty of Applied Science or a Faculty of Architecture or graduates holding the B.SC.N. from an approved university with at least 66% in the final and one other year.

Each candidate shall:

1 submit evidence of not less than two years of approved wage-earning experience in the field of his major subject;

2 be required to take the courses of the Program for the Type B Certificate, and to obtain a grading of 66%;

3 take additional courses in the organization, administration, and

supervision of vocational schools, educational measurements, cu
riculum development, comparative education, and philosophy
education.

79. Program for the Interim Vocational or Occupational Certificate, Type B

The program consists of three parts:

PART I:

Educational Psychology, Administration and Program Developmen
English, Mathematics, History of Vocational Education, Principl
of Teaching and Classroom Management. Technical Subjects: su
ject analysis, shop plan, equipment list, yearly budget course
study, Practical Laboratory.

PART II:

Applied Teaching Techniques, Observation and Practice Teachin
Observation and Practice Teaching is a program of from ten
twelve weeks. The program is conducted in Ontario secondar
schools. Assignment of students to practice schools is made outsid
as well as within the area of Metropolitan Toronto. Candidat
entering the course must be able and willing to accept practic
teaching assignments to those schools selected by the Director an
Associate Director of Practice Teaching. Candidates absent fro
regular practice teaching weeks may be required to do other assig
ments later in the session.

PART III:

Technical Proficiency Examination.

Every applicant shall be required to pass an examination designe
to test his attainments as a skilled worker in the subject concerne
The examination shall be on the fundamental principles, operation
processes and skills of the subject, and shall be in two parts
written and practical. In the practical examination, the applica
will be required to show his skill in a performance test.

Details of Courses in the Program for the Interim Vocational or Occupational Certificate, Type B

NOTE: In each case, the numeral in brackets indicates the number of lecture hours per week.

8 Administration and Program Development

461 *Administration and Program Development* (1 hour). The teacher's rôle as a professional person; responsibilities to students, to the school and to society; professional relationships and attitudes. The teacher's rôle in the administrative framework of the school; organization of education systems, provincial and local; powers and duties of the various educational authorities; Education Acts and Regulations of the Province of Ontario.
Special reference to professional organizations, teacher certification, curriculum, types of schools, finance.

81. Educational Psychology

463 *Educational Psychology* (3 hours). Introduction to principles of educational psychology as they apply to the teacher and pupils; motivation; development and adjustment; school discipline; intelligence and its measurement; learning process; mental hygiene; basic principles and current practices in Guidance.

82. English

465 *English* (3 hours rhetoric)
466 *English* (1 hour workshop)

RHETORIC:
An introduction to the methods and patterns of clear and effective writing; relationship between thinking and the composition process; perceptive seeing; organization of stimuli and meaningful transmission of response; rhetorical considerations in the composition of sentences and paragraphs; characteristics and techniques of effective identification, definition, classification, comparison and contrast, illustration, and three types of analysis: functional, process and causal. The planning, evaluation and assignment of compositions of various types is a significant part of this course.

INTRODUCTION TO SEMANTIC PRINCIPLES:
Abstract and concrete terms; problems in definition; characteristics of words; denotation, connotation, language and personality; problems in verbal communication.

ORAL PRESENTATION:
Communicating with an audience; eliminating self-consciousness; voice-improvement; oral reading; phrasing oral questions; brief prepared speeches; evaluating oral presentation; characteristics of effective lesson presentation.
Before beginning this course, some formal preparation may be advisable for candidates who lack command of basic English structure and usage.

83. History and Philosophy of Vocational, Occupational, and Industrial Arts Education

467 *History and Philosophy of Vocational, Occupational and Industrial Arts Education* (1 hour). Designed to acquaint the student with the historical development of education, and the philosophical concepts which underly it.
Basic beliefs and assumptions about reality, knowledge, values and social philosophy will be studied, and contributions made by the educational reformers, Comenius, Rousseau, Pestalozzi, Spencer, Dewey and Whitehead will be examined. Stress will be placed on the influence of these philosophers on current vocational, occupational and Industrial Arts practices so that a proper perspective may be gained as we examine the various types of education as facets of general education practice.

84. Mathematics

469 *Mathematics* (2 hours). Introduction to mathematical structures involving a review of the basic number systems; fundamental concepts of logic, graphing in two- and three-dimensional space; vectors and their application; study of relations; defining equations and inequations of relations; introduction to the basic ideas of calculus by a consideration of velocity and rate of growth problems; a system of equations and inequations; introduction of linear programming.

85. Principles of Teaching and Classroom Management

Principles of Teaching and Classroom Management
471 *Aims and Philosophies of Education* (3 hours)
1 Aims of Education
2 A Taxonomy of Educational Objectives:
- **a** The Cognitive Domain
- **b** The Affective Domain
- **c** The Psychomotor Domain

3 Profile of an Ideal Teacher
4 Human Relations in the Classroom: Teacher Attitudes
5 Professional Ethics
6 Public Relations
7 The Preparation of Instructional Objectives
8 Evaluation of Teaching

472 *Applied Teaching Techniques* (3 hours)
1 Analysis of Formal Lesson Types

2 Lesson Planning
3 The Art of Questioning
4 Inductive and Deductive Reasoning
5 The Teaching and Learning of Concepts and Principles
6 The Teaching and Learning of Skills
7 Problem Solving, Creativity, and Discovery Learning
8 Audio-visual aids in Teaching
9 Individual Instruction
10 Group Dynamics in Teaching
11 Practice Lessons

473 *Learning* (3 hours)

1 The Nervous System: Relation to Learning
2 The Learning Process: Definitions, Theories, and Types of Learning
3 Efficient Study Methods
4 The 'Laws of Learning'
5 Direct and Indirect Experiences
6 Habits and Habit Formation
7 Motivation
8 Individual Differences
9 Economy and Techniques of Learning: Making Learning Efficient

474 *Organization and Management* (3 hours)

1 Routine Duties
2 Tests and Examinations; Construction and Administration
3 Statistical Analysis of Scores
4 Measuring and Recording Pupil Progress
5 Preparation of Instructional Materials: Instruction Aid Sheets; Audio-Visual Media
6 Discipline
7 Homework and Notebooks
8 Team Teaching

86. Technical Subjects

Technical Subjects (2 hours)

479 *Subject Analysis*

480 *Course of Study*. Study of the work of the skilled craftsman to determine the teachable content of each trade or calling. Analysis of the subject to determine the skill, and the trade, technical and concomitant knowledge of the skilled worker; selection of instructional materials and arrangements into groups according to learning difficulties; selection of projects to be used to fit the order of the course of study; determination of related mathematics, science, drawing and auxiliary information needed in each project; preparation of the course of study; unit courses.

481 *Preparation of a model shop plan*

482 *Preparation of an equipment list and budget*

87. Vocational Home Economics

NOTE:

For details of Principles of Teaching and Classroom Management Educational Psychology, Administration and Program Development History of Vocational Education, see Details of Courses for the Interim Vocational Certificate, Type B. (See Sections 80, 81, 83, 85.)

483 *Methods of Teaching Home Economics* (10 hours). Philosophy and Techniques of Teaching:

History of Home Economics in Ontario schools; the option program; Home Economics curriculum related to the fundamental principles, practices and standards in home and family living. Use of the Ontario Curriculum guides; planning lessons and units. Teaching techniques and instructional materials. Problems of organization; equipment, texts and references. Evaluation, records, budgets, regulations.

APPLIED METHODS:

Use of special teaching techniques in preparation and teaching of selected lessons suggested in the Ontario Curriculum guides in Home Economics. Use and preparation of instructional materials.

NOTE:

Candidates in Vocational Home Economics will be required to attend provincial schools for Observation and Practice Teaching in Home Economics classes for ten weeks during the session. Students who are absent from regular practice weeks may be required to do other assignments later in the session.

88. Additional Related Course

455.13 *Introduction to Vocational, Occupational, and Industrial Arts Education* (2 hours). Types of certificate, the admission requirements, history, philosophy, and the means of realizing the aims of these three types of education.

(B) Industrial Arts

89. Industrial Arts Certificates

Candidates with suitable academic standing and an Ontario Elementary, High School Assistant's or Vocational Teaching Certificate may enter a One-Year Program leading to an Industrial Arts Certificate.

Interim Intermediate Industrial Arts Certificate

The basic certificate is the Interim Intermediate Industrial Arts Certificate. It qualifies the holder for five years as a full-time teacher of Industrial Arts in Divisions up to and including the Senior Division.

A Permanent Intermediate Certificate may be requested of the Department of Education upon completion of two years' successful experience in an elementary or secondary school in Ontario.

Interim Specialist Industrial Arts Certificate

The higher certificate is the Interim Specialist Industrial Arts Certificate which is valid for five years. The holder may ask the Department of Education for a Permanent Specialist Industrial Arts Certificate upon the completion of two years' successful experience in Ontario in Industrial Arts teaching.

90. General Conditions of Admission

General Conditions of Admission

An applicant for admission to the One-Year Program for Certificates in Technical Education and Industrial Arts must make application, not later than August 3, to the Director of the Department of Technical and Industrial Arts, 371 Bloor Street West, Toronto 181, Ontario, on a form to be obtained from him, and shall submit with the application, on forms also to be supplied by the Director:

A certificate of birth

If not born in Canada, the candidate must submit a certificate from a competent authority that he is a Canadian citizen or has landed immigrant status or has applied for Canadian citizenship.

A candidate for admission is required to produce evidence of a negative tuberculin test reading or chest x-ray taken within the preceding year.

91. Conditions of Admission, the Interim Intermediate Certificate

An applicant shall submit:

1 a basic Ontario teaching certificate.

NOTE:

Every teacher of Industrial Arts in an elementary school must hold an Elementary School Teacher's Certificate in addition to his Industrial Arts Certificate.

If a sufficient number of applicants apply a special half-year course beginning in January will be offered to those candidates who have:

1 Successfully completed Parts I and II of the Elementary Industrial Arts Summer Program and Part I of the Industrial Arts Supervisor's Summer Program with a minimum of a B standing in the latter

or

2 Successfully completed Parts I, II and III of the Elementary Industrial Arts Summer Program with a minimum of a B standing in Part III

or

3 Successfully completed Parts I (seven-week course) and II (seven-week course) of the Elementary Industrial Arts Summer Program with a minimum of a B standing in Part II.

92. Conditions of Admission, the Interim Specialist Certificate

An applicant shall:

1 hold an Intermediate Certificate in Industrial Arts with a B standing; and

2 subsequently, have at least one year of successful teaching in the field of Industrial Arts, as verified by the regional superintendent concerned; and

3 show evidence of having obtained not fewer than seven Grade 13 credits or approved equivalents, including two in English. It is recommended that the candidate include papers in Mathematics and Science.

93. Program for the Interim Intermediate Certificate

Industrial Arts, Intermediate

PART I: Laboratory Experience: material science; design technology; environmental design; fabrication and production; Philosophy and Methodology; Curriculum Development; History of Industrial Arts; Guidance; Educational Psychology.

PART II: Observation and Practice Teaching:

Each candidate is given at least three weeks in a practice school. His teaching progresses from individual and group instruction to complete charge of routine duties and class instruction. If possible, the candidate is sent to the general shop in an elementary school, a junior high school, and a collegiate institute.

PART III: Performance Test:

See Section 96.

Details of Courses in the Program for the Interim Intermediate Industrial Arts Certificates

487 *Curriculum Development* (1 hour). A study of the problems involved in developing the program and environment for teaching industrial arts. Lecture and assignment.

489 *Applied Design*

489.1 *Design Technology* (6 hours). Electricity and Electronics; concepts, applications, power mechanics, and central control of electricity. Lecture and laboratory.
Mechanics: Simple machines and applications; fluid power; basic physics as applied to mechanics. Lecture and laboratory.

489.2 *Design Environment* (4 hours). Introduction to basic elements and principles of visual aspects of the environment, and the process of designing, recording and communicating ideas in two and three dimensions. Lecture and laboratory.

491 *Fabrication and Production* (10 hours). The development of basic skills in the use of hand tools and machines, and in the handling of materials. Areas of study include the processing of natural and synthetic materials. Problem solving techniques are learned as the acquired skills are applied. Lecture and laboratory.

493 *Material Science* (2 hours). The study of the structure and properties of materials related to sources; production and use. Lecture and laboratory.

495 *Philosophy and Methodology* (3 hours). Current educational thought: contemporary aims, problems and practices in education, with particular reference to industrial arts education.
The general purpose of the course will be to present an historical perspective and philosophical insight to help students appreciate modern educational issues. Lecture and seminar.

462 *Administration and Program Development* (1 hour). The teacher's rôle as a professional person; the teacher's rôle in the administrative framework of the school. Lecture.

463 *Educational Psychology*. See Section 81 for content.

94. Program for the Interim Specialist Certificate

Industrial Arts Specialist

PART I: Teaching Subjects

Complete three of:

Architectural Drawing and Building Construction
Communications
Design Education
Electricity I
Electricity II
Mechanical Technology
Metal Fabrication and Production
Plastics Technology
Science Technology
Wood Fabrication and Production

PART II: Educational Theory and Professional Practice

Courses are offered in this area to emphasize the professional development of teachers so that they may become more efficient, intelligent educators with an interest in and understanding of current educational change.

PART III: Observation and Practice Teaching

9[illegible] Final Standing

The final standing of students in attendance in the program for the Vocational Certificate, Type B, Occupational Certificate, Type B (Practical Subjects), or programs for the Intermediate and Specialist Certificates in Industrial Arts, shall be determined by the sessional records of Part I, by the records of Part II of the programs concerned, and by the results of examinations of Part III. (See Sections 79 and 93.)

The sessional records in each program represent oral and written exercises, practical work, research reports, frequent tests, and the results of term and final examinations.

A candidate shall pass in each of the subjects listed in the Program of Studies of the program concerned. The pass standard shall be 50% (grade D) of the marks assigned to each subject of Part I and 50% (grade D) of the marks assigned for each division of Part II (Observation and Practice Teaching), and 50% (grade D) of the marks assigned for each section of Part III (Performance test for Industrial Arts or Technical Proficiency Examinations for Vocational Students).

[illegible]. Performance Test

A candidate for the Intermediate Industrial Arts Certificate or the Specialist Industrial Arts Certificate must pass a performance test before being recommended for a certificate.

97. Technical Proficiency Examinations Vocational and Occupational

A candidate for the Interim Vocational or Occupational Certificate, Type B, must obtain 50% (grade D) in each of the practical and theory portions of the Technical Proficiency Examinations.

9[illegible] Supplemental Examinations

A candidate for the Vocational or Occupational Certificate Type B (Practical Subjects) or the Intermediate or Specialist Certificate in Industrial Arts who passes in Part II (Observation and Practice Teaching) and fails with a score not lower than 40% in not more than two subjects of Part I shall be exempted from further attendance. He may complete his standing for a certificate by re-writing, at an annual examination, the examination(s) in the subject(s) in

which he failed. Supplemental examinations will be held in August. If either or both of the two failing scores are lower than 40%, the candidate shall attend one Summer Session in the subject(s) concerned.

It is the responsibility of the student concerned to apply, not later than July 1, for permission to write the supplemental examination in which standing is desired.

99. Failure in More than Two Subjects

Candidates who fail in more than two subjects of Part I or in either division of Part II (Observation and Practice Teaching) shall be required to attend and successfully complete another session as follows:

1 Candidates for Vocational and Occupational Certificates shall attend the Winter and Spring terms of the One-Year Program or one Summer Session;

2 Candidates for Industrial Arts Certificates who fail in more than two subjects of Part I shall attend either the Winter and Spring terms of the One-Year Program or one or more Summer Sessions as The Council of The College directs. Candidates who fail in either division of Part II (Observation and Practice Teaching) shall attend the Winter and Spring terms of the One-Year Program.

3 Candidates for the Vocational or Occupational (Practical Subjects) Certificates, Type A, who fail in two or more subjects will be required to repeat the session concerned.

100. Failure in the Technical Proficiency Examinations

A candidate for the Vocational or Occupational Certificate, Type B, who fails in the practical or theory portions of the Technical Proficiency Examinations shall write a supplemental examination if his average is more than 40% but less than 50%. If his average is below 40%, he will be permitted to complete the One-Year Program provided his standing in the professional subjects is satisfactory. However, Summer Session students will not be admitted to the Completing Summer Session.

101. Submission of Assignments

Final marks in any subject or for any Vocational, Occupational or Industrial Arts Certificate may not be issued until all assignments have been submitted.

NOTE: As the value of *an endowed scholarship or prize* is dependent on the actual income of the fund, it is possible that the value of certain scholarships and prizes at the time of payment may be less than the amount stated in the Calendar.

1. Fellowships

The Province of Ontario Teacher Education Award in the amount of $500 is available to full-time students in the High School Assistants' and Technical and Industrial Arts Departments who are candidates for Department of Education certificates. No application for the award is necessary.

103. Ontario Student Awards Program/Canada Student Loans Plan

Ontario Student Awards Program/Canada Student Loans Plan

This Plan, instituted by the Federal Government in 1964, was introduced to provide loans to supplement the resources of a student and/or the parents where, in the absence of such aid, a student would be unable to pursue a post-secondary education. A student should apply for a loan under this Plan for only the funds needed, over and above those from his own resources and/or those of his family, to enable him to continue his studies. The institution to which application is made will determine the amount of loan required in each case.

Borrowers under this Plan are required to repay principal and to pay interest, but no payments are required so long as the student is in full-time attendance at an eligible institution and for six months thereafter. Interest charges during this period are paid by the Federal Government who also guarantees the loan principal. After the interest-free period, repayment of principal and simple interest charges on the outstanding balance are required in regular monthly payments to the bank from the borrower. The maximum amount which may be advanced under this Plan to one student is $1,000 in one year (ending June 30). The maximum total indebtedness under this Plan is $5,000.

Application should be made in the first instance to the Registrar, The College of Education. If a loan is approved, the institution will issue a Certificate of Eligibility which authorizes the student to make arrangements for the loan with any branch of any chartered bank in Canada.

104. The William Pakenham Fellowship in Education

The late Dr. William Pakenham bequeathed to the University o Toronto the residue of his estate to be used as the governing boc of the University may direct on behalf of the activities of Th College of Education.

Accordingly, a Fellowship in Education has been established fc advanced work either in the University of Toronto or in some othe university approved by the Senate. The Fellowship shall be awarde at such intervals and have such value (usually $2,000) as th Senate on the recommendation of The Council of The College c Education may from time to time determine.

Applicants must be residents of Ontario, holding a Bachelor degree and a teacher's certificate valid in a Canadian province, an must submit a record of professional experience and evidence c ability to make a contribution to education in Canada as a resu of further work.

An application form may be obtained from the Registrar, Th College of Education. Completed applications must be received b March 15.

105. The Pakenham Memorial Prize

As a memorial to Dr. William Pakenham, Dean of The College o Education from 1907 to 1934, the teachers of Ontario have founde an annual Memorial Prize of the value of the interest on $1,000 The Prize will be in the form of books stamped with the Coat o Arms of the University of Toronto, and will be awarded to th student who obtains the highest standing, as reported in the annua returns of The College, in the subjects of Part I of the High Schoo Assistants' Program, Type B, and in Practice Teaching.

106. The Hugh W. Bryan Memorial Prize of The Ontario Secondary School Teachers' Federation

The Ontario Secondary School Teachers' Federation has founde an annual scholarship of the value of $100 in memory of a forme President of the Federation, Dr. Hugh W. Bryan. The prize will b awarded by the Scholarship Committee of the Federation at th close of each session and after receipt of a report from The Counci of The College of Education, to the student in regular attendanc throughout the session in the High School Assistants' Program whc has shown 'the most outstanding qualities of scholarship, teaching ability, and character.'

107. The Polymer Corporation Scholarship in Science and/or Mathematics

The Polymer Corporation Limited of Sarnia, Ontario, has estab lished a scholarship of $750 to increase the supply of teachers qualified to teach Science or Mathematics in secondary schools. The applicant must be a resident of the Province of Ontario who has graduated in the past five years with a degree in Arts or Science from a Canadian university. The applicant must have Canadian citizenship or have declared intent to obtain this.

Candidates must be prepared to teach Mathematics and/or Science in a secondary school in Canada upon completion of the 1970–71 regular session of The College of Education, University of Toronto.

Application forms are available from the Registrar, The College of Education, 371 Bloor Street West, Toronto 181, or from the Secretary, Scholarship Committee, Polymer Corporation Limited, Sarnia, Ontario. Completed applications must be received not later than May 15, by the Secretary, Scholarship Committee, Polymer Corporation Limited.

108. The Confederation Life Association Scholarship in Mathematics or Mathematics and Physics

The Confederation Life Association has established a scholarship of $500 to attract honour graduates in Mathematics or in Mathematics and Physics into the teaching profession. The applicant must be a graduate of a Canadian university and must agree to attend the 1970–71 session of The College of Education, University of Toronto, to qualify for a Type A Certificate in Mathematics or Mathematics and Physics.

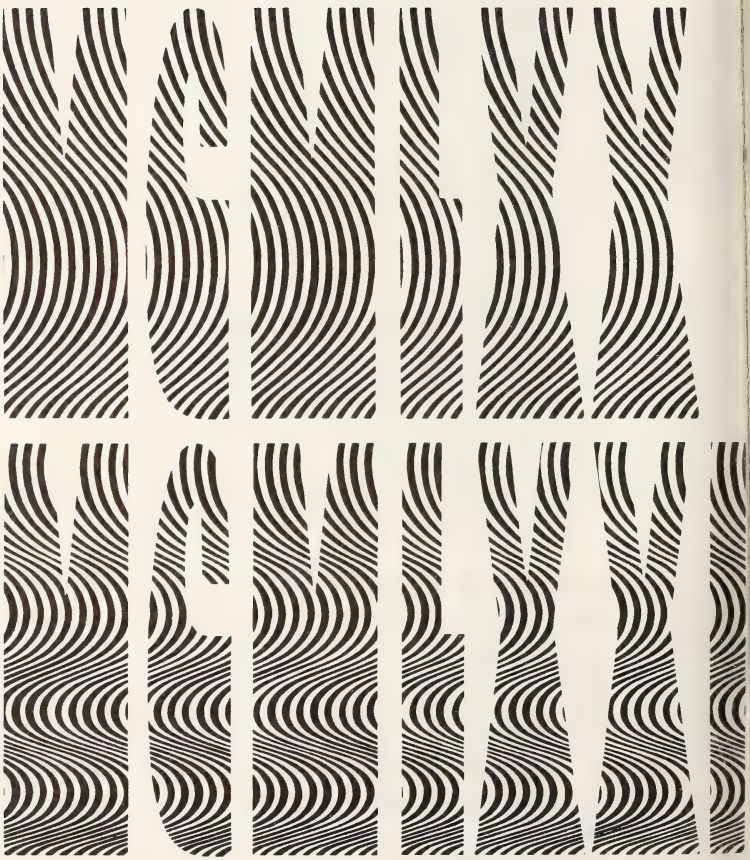
Application forms are available from the Registrar, The College of Education, 371 Bloor Street West, Toronto 181, or from the Head of the Department of Mathematics or Physics at the student's university.

The completed application forms must be received by the Registrar, The College of Education, University of Toronto, before May 15.

University of Toronto Degree Programs of Interest to Teachers

109. Graduate Degrees, Ontario Institute for Studies in Education

Programs of study leading to University of Toronto graduate degrees of Master of Education, Master of Arts, Master of Philosophy, Doctor of Education and Doctor of Philosophy are available through the Ontario Institute for Studies in Education. Enquiries should be addressed to the Director of Graduate Studies, Ontario Institute for Studies in Education, 252 Bloor Street West, Toronto 181.



10. Discontinuation of the High School Assistants' Type B Summer Sessions

The High School Assistants' Type B, Summer Sessions, established in 1955 as an emergency measure, have been discontinued for recent graduates.

The Completing Seven-Week Summer Session, Type B, however, will be provided in 1970 for those candidates who successfully completed the Initial Eight-Week Summer Session of 1969. (See Section 111.)

11. High School Assistants' Completing Seven-Week Summer Session

A Seven-Week Summer Session for the High School Assistant's Certificate, Type B, will be held from June 29, 1970, to August 14, 1970, for candidates who qualified for Temporary Secondary School Teachers' Certificates on completion of the Initial Eight-Week Summer Session of 1969, and who are recommended for admission by the principal and regional superintendent concerned. The program of studies will consist of courses in principles and procedures of teaching the optional subjects of the Initial Program, Educational Psychology, and the History, Philosophy, Sociology of Education.

A candidate who fails in more than two subjects shall attend the Summer Session described in Section 112 with a change of optional subjects.

A candidate who fails in more than two subjects of the Completing Program (of which only one may be a course in the principles and procedures of teaching) may qualify for the Type B Certificate under conditions outlined in Section 30.

11a. High School Assistants' Type B Summer Program for Teachers with Professional Education

A summer program leading to the High School Assistant's Certificate, Type B, will be held from June 29, 1970 to August 7, 1970. Examinations will take place during the last week of the course.

This course is open to a candidate who holds a university degree approved for admission to the High School Assistants' Course, Type B, and

i who, after failing in a Completing Course or a One-Year Program of a College of Education, has been given permission by the Dean to attend this course with a change of options,

OR

ii who holds an Interim Ontario Elementary School Teacher Certificate, Standard 4,

OR

iii who holds a Permanent Elementary School Teacher's Certificat Standard 4, and who does not have a contract with a secondar school board,

OR

iv who holds an acceptable teaching certificate other than (i or (iii) above,

OR

v who is eligible for a secondary school Letter of Standing but wh wishes to familiarize himself with the Ontario school system.

A candidate who fails in more than two subjects shall re-attend Summer Session for Teachers with Professional Education anothe year.

A candidate who fails in not more than two subjects of the progra (of which only one may be a course in the principles and proc dures of teaching) may qualify for the Type B Certificate unde conditions outlined in Section 30.

Candidates are required to produce evidence of a negative tuberculi test reading or chest x-ray taken within the preceding year.

The program will consist of course offerings of the Department o Administration and Program Development and an appropriate pa tern of two secondary school subjects chosen from the following English, History, Geography, Latin, French, German, Mathematic or Science. In the case of a degree which will not support the choic of *two* of the above options the candidate may choose Physical an Health Education or Theatre Arts as a second optional subject. Th Physical and Health Education course leads to Part I of the Inte mediate Certificate in Physical and Health Education. The Theatr Arts course leads to the Theatre Arts Certificate.

If a sufficient number of teachers apply a special course will b offered in The College of Education with Business and Commerc as two subjects or options, i.e., Typewriting *and* either Accountancy Marketing or Secretarial Science. For further information pleas write to Professor A. P. Seggie, The College of Education, 371 Bloo Street West, Toronto 181.

NOTE:

See Section 17 regarding *Interchange of Ontario Teaching Certificates*

113. High School Assistants' Type A Seminars

A special Summer Session of six weeks, beginning on June 29 1970, will be offered to provide the opportunity for teachers wh hold a High School Assistant's Certificate, and who possess th necessary academic qualifications, prescribed in Department o Education Circular 649, to obtain an Interim High School Assist ant's Certificate, Type A. On July 1, 1969, Type A agreement between the Department of Education and the universities termin ated. Candidates for Type A courses will be admitted on the basi

of transcripts evaluated by the Committee on Advanced Standing in accordance with the provisions of Department of Education Circular 649. It should be observed that this change in procedure will not affect students who enrolled in Ontario universities in September 1965; it will affect those who enrolled in or after September 1966.

Professional courses leading to the Type A Certificate in one of the following special fields of scholarship will be offered:

Biology
Chemistry
Classics
Economics
English
English and French
English and German
English and Latin
English and Spanish
English and History
French
French and German
French and Italian
French and Spanish
Geography
History
Home Economics
Italian and Latin
Latin
Latin and French
Latin and Greek
Mathematics and Physics
Mathematics
Music
Physical and Health Education
Physics
Political Science
Political Science and Economics
*Psychology
*Psychology and Sociology
*Sociology
Science
Spanish and Latin

*If sufficient numbers apply.

Applicants must be recommended in their special fields of scholarship and teaching by the Department of Education on the basis of their competence as a classroom teacher of their Type A subject(s) in an Ontario secondary school. If it should prove necessary, an equitable limitation of the enrolment may be made. Preference will be given to teachers holding the Permanent High School Assistant's Certificate. Applications will be considered in the order in which they are received. Applications for enrolment must be made to the Registrar, The College of Education, by April 1, 1970.

114. Home Economics Summer Sessions

Part II of the revised program and Parts III and IV of the former program of the summer courses leading to the Intermediate Certificate in Home Economics will be held in 1970:

PART II (revised program) June 29 to August 14
PART III (former program) June 29 to August 7
PART IV (former program) June 29 to August 7

Admission Requirements:

PART II Elementary Home Economics Certificate based on completion of Part I, revised program
PART III Elementary Home Economics Certificate based on completion of Part II, former program

PART IV Successful completion of Part IV, former program

The summer courses leading to the Intermediate Certificate Home Economics are being discontinued, and Part I will not offered in 1970. Teachers who have already received standing one or more parts of the course may complete requirements f the Intermediate Certificate according to the following schedule, be offered at Toronto only:

Year	*Course*	*Requirement for Admission*
1970	PART II (revised program)	Elementary Home Economi Certificate (revised program
	PART III (former program)	Elementary Home Economi Certificate (former program
	PART IV (former program)	Successful completion of Pa III
1971	PART III (revised program)	Successful completion of Part (revised program)
	PART IV (former program)	Successful completion of Pa III (former program)

Applications for Parts II, III and IV must be submitted not lat than May 1 to the Head, Home Economics Summer Courses, Th College of Education, 371 Bloor Street West, Toronto 181, Ontari A late fee of $20.00 will be assessed applicants accepted betwee May 1 and June 1. Late applications will be accepted only classes are not filled. No application can be accepted after June These summer courses will not be given after 1971. Teachers wh wish to qualify to teach Home Economics may do so by takir five approved University courses in Home Economics followed b one summer seminar at The College of Education, University c Toronto.

Intermediate Program for Graduates with University Credits i Home Economics. This seminar will not be offered in 1970.

115. Physical and Health Education Summer Sessions

Separate Summer Sessions in Physical and Health Education wi be offered in Toronto for men and women.

Intermediate Summer Sessions

The program leading to an Intermediate Certificate in Physical an Health Education consists of two Summer Sessions (Intermediat Parts I and II). These will be held from June 29 to August 7, 197(Applicants for admission to the Summer Sessions must hold a Hig School Assistant's Certificate.

Applicants holding an Elementary Physical and Health Educatio Certificate granted under former regulations may be admitted t the second Summer Session (Intermediate, Part II).

Specialist Summer Session

The Summer Session leading to the Specialist Certificate will b held in Toronto from June 29 to August 7, 1970.

Applicants for admission must hold an Interim High School Assistant's Certificate or a Permanent High School Assistant's Certificate and an Intermediate Certificate in Physical and Health Education, and have taught for a period of at least one year in a secondary school in Ontario, or in Grade 9 or 10 of an elementary school or a separate school in Ontario, or hold a High School Assistant's Certificate and a Supervisor's Certificate in Physical and Health Education.

Special Summer Session for Teachers of Physical Education for Girls

The Special Summer Session for Teachers of Physical Education for Girls will be held in Toronto from June 29 to August 7, 1970.
Applicants for admission to the Summer Session must hold:
1 a Permanent Elementary School Teacher's Certificate or First Class Certificate;
2 a Secondary School Honour Graduation Diploma or equivalent standing;
3 a contract with an Ontario secondary school Board of Education.
After a satisfactory completion of the program, the candidate will receive from the Department of Education a letter to that effect.

Medical Certificates

Each applicant is required to forward by June 15 a medical certificate from his own physician indicating that he is physically fit to take a Summer Session in Physical and Health Education. Final registrations will not be accepted and students will not be allowed to take part in the Summer Session until this condition has been fulfilled.

Applications

Application forms may be obtained from the Head of Women's Physical and Health Education, or from the Head of Men's Physical and Health Education, The College of Education, 371 Bloor Street West, Toronto 181. Completed application forms must be returned not later than June 1, 1970.

116. School Librarianship Summer Sessions

There are three six-week Summer Sessions leading to the Specialist Certificate in School Librarianship. The Intermediate Summer Session, Parts I and II, lead to the Intermediate Certificate in School Librarianship. The third Summer Session leads to the Specialist Certificate in School Librarianship. The three sessions must be taken consecutively. They are offered to meet the greatest need, hence all three are not offered every summer, nor consecutively.
The Specialist Program will be offered in Toronto from June 29 to August 7, 1970. Application forms may be obtained from the Chairman, School Librarianship Department, The College of Education, 371 Bloor Street West, Toronto 181. Application forms must be submitted before May 1, 1970.

Specialist Summer Session:

This summer program will continue the training offered in th Intermediate Program. It will include the following: Contemporar Adult Fiction for Young People; Recreational Reading for th Reluctant Reader, School Media Centre Program and Administra tion, Recreational Reading for Grades 7–9, Planning School Med Centre Quarters, Audio-visual Materials, Curriculum-Related Ma terials in a Selected Subject area.

Applicants for admission to the Specialist Program must:

1 hold a Permanent High School Assistant's Certificate;

2 submit evidence, certified by the principal of the school cor cerned, of at least one year of successful secondary school librar experience during a minimum of 15 periods per week, subsequer to completion of the Intermediate Program, Part II.

A candidate who successfully completes this Program will b recommended for the Specialist Certificate in School Librarianshi

117. Business and Commerce Summer Sessions

Teachers who wish to enrol in any of the following Summer Ses sions should write for application forms to the Director, Busines and Commerce Department, The College of Education, 371 Bloo Street West, Toronto 181, and should submit the completed forr before June 1, 1970.

Intermediate Session, Part I. Summer sessions leading to Part I o the Intermediate Accountancy, Data Processing, Marketing o Secretarial will be held at Central High School of Commerce, To ronto, for candidates who hold an Elementary School Teacher' Certificate or a High School Assistant's Certificate.

Subjects Offered:

Typewriting 101 A and B; Typewriting 102; Bookkeeping 111 A an B; Shorthand 121 A and B; Retail Merchandising 131; Introductio to Data Processing 141; Principles of Electronic Data Processin 241; Principles and Practices of Teaching Typewriting 103; Prin ciples and Practices of Teaching Bookkeeping 113; Principles an Practices of Teaching Shorthand 123; Principles and Practices o Teaching Merchandising 133; Principles and Practices of Teachin Data Processing 143.

Intermediate Session, Part II

Summer sessions leading to the Intermediate Accountancy, Dat Processing, Marketing or Secretarial certificate will be held a Central High School of Commerce, Toronto. To these courses ma be admitted an applicant who has completed or who is completin subjects for the Intermediate, Part I, course.

Subjects Offered:

Principles and Practices of Teaching Business 153; Business Organi zation 231; Business Machines 201; Machine Mathematics 202 Business Arithmetic 202; Business Law 204; Business Finance 205

Shorthand Practice 221; Office Practice 222; Office Procedures 224; Business Correspondence 225; Economics of Distribution 232; and Consumer Principles and Practices 234.

Specialist Session

Summer sessions leading to the Specialist certificates in Accountancy, Data Processing, Marketing or Secretarial will be held at Central High School of Commerce, Toronto. To these sessions may be admitted an applicant who holds an Ontario High School Assistant's certificate, Type B, and who holds the Intermediate, Part II, of a Business and Commerce certificate or who is completing subjects for one of these certificates, and whose program, approved by the Director, Business and Commerce Department, permits a start on subjects leading to one of the Business and Commerce Specialist certificates.

Subjects Offered:

Accounting 311, 411; Secretarial 321, 421; Marketing 331, 431; Electronic Data Processing 341, 441; Principles and Practices of Teaching Accounting 413; Principles and Practices of Teaching Office Practice 423; Principles and Practices of Teaching Marketing 433; Principles and Practices of Teaching Electronic Data Processing 443; Organization and Supervision of a Business and Commerce Department 453.

Description of courses will be found in section 47.

Credit may be allowed for equivalent university courses previously taken if official transcripts are submitted.

118 Examinations nd upplementals

Examination Centres:

a Examinations, including supplementals, in the non-machine subjects based on the requirements listed below will be held in May at The College of Education, or, if sufficient candidates apply, at approved local centres. Requests to write the examinations should be made to the Director, Business and Commerce Department, before March 1, in the year of writing. The timetable of examinations will be mailed to candidates whose application has been accepted in April, in the year of writing. Late applicants will be required to write examinations in Toronto.

b Machine subject examinations based on the requirements listed below will be held on May 2, 1970 at Port Arthur, Sault Ste. Marie, North Bay, Ottawa, Windsor and Toronto only. The machine subjects are: Typewriting 101; Business Machines 201; Machine Mathematics 202; Office Practice 222; Office Procedures 224; Shorthand Practice 221; Business Correspondence 225; Secretarial 321 and Secretarial 421. The timetable will be mailed in April.

Supplementals:

A candidate who has failed to obtain standing at a previous session may try the supplementals. A supplemental may only be tried twice.

Requirements for writing examinations:

A candidate may write an examination when

a Intermediate Part I or II college correspondence courses hav been successfully completed;

OR

b Intermediate Part I or II subjects have been taught by the cand date within the last two years for a minimum of one comple school year as certified by the Principal;

OR

c Official evidence is presented of the successful completion c Intermediate Part I or II subjects at a night school course, secon dary school option course, a business college course, or an approve machine company course.

119. Two-Summer Program Leading to the Commercial-Vocational Certificate

Commercial-Vocational Courses of a two-summer sequence wi be offered at Toronto in 1970, commencing June 29 and endin July 31. These courses lead to the Interim Commercial-Vocation Certificate, Type B. This certificate is valid in any secondary scho for teaching the commercial subjects named on the certificate.

To these five-week courses may be admitted applicants holding th following degrees, diplomas, or certificates:

1 Graduates of an accredited university with standing acceptabl to the Dean who are not eligible for the High School Assistant program may qualify for admission to any one of the course offered.

2 Graduates of the three-year Secretarial Science Course at th Ryerson Polytechnical Institute may qualify for admission to th Typewriting, Office Practice and Shorthand courses.

3 Applicants holding diplomas as Chartered Accountants, Char tered General Accountants, and Registered Industrial Accountant may qualify for admission to the Bookkeeping and Accountin course.

4 Applicants who submit evidence that they have obtained a cor tract with a secondary school board, or other publicly supporte educational institution, or a contract with an inspected privat school, to teach the business subjects for which they are certifiec

Applicants proceeding toward a Commercial-Vocational Certificate Type B, may choose one of the following courses:

1 Bookkeeping and Accounting

2 Typewriting and Office Practice

3 Typewriting, Office Practice and Shorthand

The course followed determines the skills or subjects for which th certificate is valid in a secondary school.

Subjects of Certification

1 Applicants who select the Bookkeeping and Accounting course will be certified to teach Bookkeeping and Accounting, Record

keeping, and Business Practice and may also be certified for other related subjects.

2 Applicants who select the Typewriting and Office Practice course will be certified to teach Typewriting, Grades 9 and 10, and Office Practice. These teachers may also be certified for other related subjects. Teachers who select the Typewriting, Office Practice, and Shorthand courses will be certified to teach these three subjects and may also be certified to teach related subjects. Applicants for any of these courses may be required to try qualifying examinations in the field of their choice at the option of the Admissions Committee. All applications for these courses must be received prior to June 1.

Applicants who are accepted for these courses and who, after one year's successful teaching, complete a second summer course in 1971, will be granted an Interim Commercial-Vocational Certificate, Type B (subjects named), valid for five years. A permanent Commercial-Vocational Certificate (subjects named) may be issued after two years of teaching experience if the quality of the teacher's work has been satisfactory and he has completed half of the credits toward an acceptable university degree. Upon completion of the degree, teachers may apply to the Department of Education for an Interim High School Assistant's Certificate, Type B.

Detailed information regarding this course as well as information regarding examinations, should be obtained immediately from the Director, Business and Commerce Department, The College of Education, 371 Bloor Street West, Toronto 181, in order that eligibility for admission may be established before a contract is made with a school board.

20. Three-Summer Program Leading to Commercial-Vocational Certificate, Type B

Commercial-Vocational Courses of a three-summer sequence will be offered at Ottawa and Toronto in 1970 commencing June 29 and ending July 31. These courses lead to an Interim Commercial-Vocational Certificate, Type B, which is valid in any secondary school for teaching the Commercial subjects named on the certificate. These courses offer preparation in methodology for the subjects of Typewriting, Office Practice, Shorthand, and Marketing, but not for Bookkeeping or Accounting. The second and third summers of this program will be offered for those who complete successfully the work of the previous summer courses.

To these five-week courses may be admitted applicants who submit the following:

a an Ontario Secondary School Honour Graduation Diploma or equivalent, and

b a statement satisfactory to The College of Education, from an employer or employers that the applicant has had at least five years' acceptable office or merchandising experience. Graduates of the Marketing Management or Retail Administration options of the

three-year course at the Ryerson Polytechnical Institute must submi similar statements testifying to at least two years of acceptabl merchandising experience subsequent to graduation from th Ryerson Polytechnical Institute, and

c evidence that an applicant has passed the required qualifying examinations in Shorthand, Typewriting, or Marketing, and

d evidence that an applicant has obtained a contract with a secon dary school board, or other publicly supported educational institu tion, or a contract with an inspected private school, to teach th business subjects in which he has passed the qualifying examina tions.

Applicants proceeding toward a Commercial-Vocational Certificate Type B, may choose one of the following courses:

1 Typewriting and Office Practice

2 Typewriting, Office Practice and Pitman Shorthand

3 Marketing

The course followed determines the skills or subjects for which th certificate is valid in a secondary school.

Subjects of Certification

1 Applicants who select the Typewriting and Office Practic course will be certified to teach Typewriting, Grades 9 and 10, an Office Practice. These teachers may also be certified for othe related subjects. Teachers who select the Typewriting, Office Prac tice, and Shorthand courses will be certified to teach these thre subjects and may also be certified to teach related subjects.

2 Applicants who select the Marketing course will be certified t teach Retail Merchandising, Grades 9 and 10, and Marketing Grades 11 and 12, and may be certified to teach related subject in the marketing field.

Examination Regulations

Qualifying examinations will be offered at The College of Educa tion, Toronto, in March, April and May. Prior arrangements fo writing examinations must be made through The College of Edu cation. Special arrangements may be made prior to May 15, t write examinations in designated examination centres outside To ronto. No qualifying examinations are offered after June 1, 1970 If the applicant is successful in the summer courses and in teach ing, the employing board will not be required to advertise th position during the teacher's second year of teaching. After th third summer course the successful candidate will receive an Interim Commercial-Vocational Certificate, Type B (subjects named). This certificate will be valid for five years. A permanent Commercial Vocational Certificate (subjects named) may be issued after two years of experience if the quality of the teacher's work has been satisfactory and the teacher has completed half the credits toward an acceptable university degree. Upon award of this degree, the

teacher may apply to the Department of Education for an Interim High School Assistant's Certificate, Type B, and will be eligible to proceed toward Commercial Specialist Status.
Detailed information regarding this course as well as information regarding examinations should be obtained immediately from the Director, Business and Commerce Department, The College of Education, 371 Bloor Street West, Toronto 181, in order that eligibility for admission may be established before a contract is made with a school board.

121. Vocational and Occupational Summer Sessions

Vocational, Type B, Summer Sessions

A Summer Session leading to the Interim Vocational Certificate, Type B, will be offered from June 29 to August 14, 1970 for holders of High School Assistant's Certificates who meet Department of Education requirements for Vocational certification.

Vocational and Occupational Type B (Practical Subjects), Summer Session

The first of two seven-week Summer Sessions leading to the Interim Vocational Certificate, Type B, or the Interim Occupational Certificate, Type B (Practical Subjects), will be offered from June 29 to August 14, 1970.
See Sections 80–87 for details concerning those candidates who can satisfy the admission requirements to the One-Year Program and in addition have a signed contract to teach a Vocational subject or the practical Occupational subjects for the school year 1970–71.

Vocational, Type A, Summer Sessions

Summer Sessions leading to the Vocational Certificate, Type A, will be held from June 29 to July 31, 1970. Parts I and II will be offered by The College of Education.

Occupational, Type A (Practical Subjects), Summer Sessions

Summer Sessions leading to the Occupational Certificate, Type A, will be held from June 29 to July 31, 1970. Parts I and II will be offered by The College of Education.

NOTES:
Applications must be received before June 1, 1970, for any Vocational or Occupational Summer Session mentioned above.
Application should be made to the Director, Technical and Industrial Arts Department, The College of Education, 371 Bloor Street West, Toronto 181.

122. Industrial Arts Summer Sessions

Program for the Elementary Certificate

A revised program of two seven-week courses will replace the former program of three five-week courses. Part I will be offered from June 29 to August 14, 1970.

Parts II and III of the former five-week program will be offered i 1970 from June 29 to July 31.

To Part I may be admitted a teacher who holds a certificate or Letter of Standing qualifying him to teach in an elementary o secondary school in Ontario.

To Part II may be admitted a candidate who has successfull completed Part I, and to Part III may be admitted a candidate wh has successfully completed Part II of the Elementary program.

Candidates will be able to complete the requirements for thi certificate according to the following schedule:

Year	*Former Program*	*Revised Program*
1970	Parts II and III	Part I
1971	Part III	Parts I and II
1972		Parts I and II

Program for the Interim Supervisor's Certificate

This program has been discontinued.

Program for the Interim Intermediate Certificate

Part I will not be offered in 1970.

Parts II and III will be offered from June 29 to July 31, 1970.

To Part II may be admitted a candidate who has successfull completed either Part I of the Intermediate program or who hol an Interim Supervisor's Industrial Arts Certificate.

To Part III may be admitted a candidate who has successfull completed Part II of the Intermediate program.

NOTE: For those candidates who can meet the admission requir ments Part I will be offered in 1971 for the last time, providin sufficient candidates apply.

Candidates will be able to complete requirements for the Interi Intermediate Industrial Arts Certificate through the summer pr gram according to the following schedule:

Year	*Courses Offered*
1970	Parts II and III
1971	Parts I and III
1972	Part II
1973	Part III

Program for the Interim Specialist Certificate

Parts I, II and III of the three-summer sequence will be offere from June 29 to July 31, 1970.

To Part I may be admitted a candidate who:

a holds an Interim Intermediate Industrial Arts Certificate, and

b has taught Industrial Arts successfully for one year subseque to obtaining the Intermediate Certificate as confirmed by th Superintendent concerned;

c has seven Grade 13 credits (two of which shall be English or French) or equivalent as approved by The College of Education.
To Part II may be admitted a candidate who has passed Part I.
To Part III may be admitted a candidate who has passed Part II.
Further information, and application forms may be obtained from The Director, Technical and Industrial Arts Department, The College of Education, 371 Bloor Street West, Toronto 181, Ontario.

11. Occupational Trades Summer Sessions

If a sufficient number of candidates make application, Summer Sessions in trade subjects leading to the Occupational Certificate, Type B (Practical Subjects) will be offered in 1970.
To Part I may be admitted holders of Vocational or Elementary Certificates and holders of Industrial Arts Intermediate Certificates, who hold contracts with Boards of Education to teach this subject in composite schools. Acceptable additional work experience is necessary.
To Part II may be admitted candidates who have completed Part I.

12. Attendance at Summer Sessions

Owing to the compact nature of the Summer Sessions, absenteeism cannot be tolerated except for reasons of health and then only for a maximum of five days supported by a medical doctor's statement. This regulation applies to all candidates attending all Summer Sessions.

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General Information	University of Toronto Handbook
Admission Information	Admission Awards Admission Circular
Applied Science and Engineering	Faculty of Applied Science and Engineering Engineering at Toronto – descriptive brochure
Architecture	Faculty of Architecture, Urban and Regional Planning and Landscape Architecture Landscape Architecture – descriptive brochure Graduate Work in Architecture – descriptive brochure
Arts and Science	Faculty of Arts and Science The New Program
Business	School of Business – Graduate Program in Business Administration
Child Study	Institute of Child Study
Dentistry	Faculty of Dentistry Division of Postgraduate Dental Education Division of Dental Hygiene
Education	The College of Education Graduate Degrees in Education*
Extension	Degree Courses in Arts, Science and Nursing Certificate Courses in Business, Public Administration, Criminology and Public Health Nursing Courses in the Liberal Arts and Social Sciences (Non-Degree) Business, Engineering and other Professional Courses (Non-Degree)
Food Sciences	Faculty of Food Sciences
Forestry	Faculty of Forestry Diploma Course in Resource Management
Graduate Studies	School of Graduate Studies
Hygiene	School of Hygiene
Law	Faculty of Law
Library Science	School of Library Science
Medicine	Faculty of Medicine, Premedical Course Faculty of Medicine, Professional Course Division of Rehabilitation Medicine Division of Postgraduate Medical Education
Music	Faculty of Music The Royal Conservatory of Music School of Music Year Book General Syllabus Pianoforte and Theory Syllabus
Nursing	School of Nursing
Pharmacy	Faculty of Pharmacy
Physical and Health Education	School of Physical and Health Education
Social Work	School of Social Work

*Write to: Ontario Institute for Studies in Education, 252 Bloor Street West, Toronto 181, Ontario.

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